

(Only for new nonprovisional applications under 37 CFR 1.53(b))

First Named Inventor or Application Identifier

Express Mail Label No.

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Box Patent Application  
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**ADDRESS TO:**

1. ☐ Fee Transmittal Form  
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- |    |   |               |             |     |
|----|---|---------------|-------------|-----|
| 2. | X | Specification | Total Pages | 121 |
|----|---|---------------|-------------|-----|

- |   |   |                         |              |    |
|---|---|-------------------------|--------------|----|
| 3 | X | Drawing(s) (35 USC 113) | Total Sheets | 71 |
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| 4 | X | Oath or Declaration | Total Pages | 1 |
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**[Note Box 5 below]**

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Signed Statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).

5. ☐ Incorporation By Reference (useable if Box 4c is checked)  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4c, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

6. ☐ Microfiche Computer Program (*Appendix*)

7. Nucleotide and/or Amino Acid Sequence Submission  
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### ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))

9. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) ☐ Power of Attorney

10. ☐ English Translation Document (if applicable)

11. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations

- |     |                          |                       |
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| 12. | <input type="checkbox"/> | Preliminary Amendment |
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13. ☒ Return Receipt Postcard (MPEP 503)  
(Should be specifically itemized)

14. ☐ Small Entity Statement(s) ☐ Statement filed in prior application Status still proper and desired

15. ☐ Certified Copy of Priority Document(s)  
(if foreign priority is claimed)

16. ☐ Other: \_\_\_\_\_

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information:

- ☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.          /

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CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
	TOTAL CLAIMS (37 CFR 1.16(c))	40-20 =	20	X \$ 18.00 =	\$ 360.00
	INDEPENDENT CLAIMS (37 cfr 1.16(b))	8-3 =	5	X \$ 78.00 =	\$ 390.00
	MULTIPLE DEPENDENT CLAIMS (if applicable) (37 CFR 1.16(d))			\$260.00 =	
				BASIC FEE (37 CFR 1.16(a))	\$ 760.00
			Total of above Calculations =		\$1510.00
			Reduction by 50% for filing by small entity (Note 37 CFR 1.9, 1.27, 1.28).		
			TOTAL =		\$1510.00

## 19. Small entity status

- a. ☐ A Small entity statement is enclosed
- b. ☐ A small entity statement was filed in the prior nonprovisional application and such status is still proper and desired.
- c. ☐ Is no longer claimed.

20. ☒ A check in the amount of \$ 1510.00 to cover the filing fee is enclosed.21. ☐ A check in the amount of \$ \_\_\_\_\_ to cover the recordal fee is enclosed.

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- a. ☒ Fees required under 37 CFR 1.16.
- b. ☒ Fees required under 37 CFR 1.17.
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## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

NAME

Leonard P. Diana (Reg. No. 29,296)

SIGNATURE



DATE

September 1, 1999

/PAP

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APPARATUS FOR PERFORMING A SERVICE IN COOPERATION  
WITH ANOTHER APPARATUS ON A NETWORK

BACKGROUND OF THE INVENTION

5 Field of the Invention

The present invention relates to a communication apparatus, an information processing apparatus, a communication system and a communication method, all of which are applied to a system wherein a plurality of  
10 users share various apparatuses connected to a network, and a storage medium on which are stored computer-readable processing steps for implementing the communication method.

Related Background Art

15 Conventionally, apparatuses such as copiers, printers, scanners and facsimile machines, which read and form images, are most often employed independently.

However, as one consequence of the continued development of computers and networks, the use has  
20 increased of arrangements, such as the one described above, wherein various types of apparatuses are connected together in a network.

As one example of such formations, a system has become popular with which, by combining a function  
25 provided by an apparatus readily available to a user (hereinafter referred to as a logical apparatus) and a function provided by an apparatus connected to a

network (hereinafter referred to as a printer), a series of meaningful processes can be preformed.

With this system, the performance of the following example operations is possible. Such as when to copy a document a user employs a local apparatus (a scanner) to scan the document, and to print the document the user transmits the obtained image data across a network to a remote apparatus (a printer). Or when a user employs a local apparatus (a terminal, such as a personal computer) to extract image data from a computer or a database at a distant location on a network, and uses another local apparatus (a printer) to print the thus obtained image data.

When in the above described system a remote apparatus (e.g., a copier) on the network is shared by a plurality of designated users, the unlimited use of the copier by a user other than the designated users must be prevented, and the status of the employment of the copier by each authorized user must be recorded.

Therefore, a user who desires to use the copier must first enter a password using the operating section of a terminal (a local apparatus), or must enter his or her user information by employing a management card on which the user information is magnetically recorded. Then, the terminal performs a verification process to authenticate the user. When the user has been authenticated the terminal accepts an entry from the

operating section, requests that the copier (a remote apparatus) on the network perform an operation desired by the user, and at the same time, updates the user's operating record information (information concerning the employment status of the copier, etc.). Therefore, the copier (the remote apparatus) performs an operation in accordance with the request transmitted by the user's terminal (the local apparatus).

However, as is described above, while a local apparatus may perform a verification process to authenticate a user, in response to an operation request received across a network a remote apparatus does not perform a verification process. Instead, it simply accepts the operation request.

Therefore, once the authentication of a user has been performed by a specific local apparatus, the user is permitted to use all the remote apparatuses on the network, i.e., the user may use a remote apparatus the use of which is inhibited. Thus, a problem exists relative to the management and the security of apparatuses.

#### SUMMARY OF THE INVENTION

To resolve the above problem, it is one objective of the present invention to provide a communication apparatus, an information processing apparatus, a communication system and a communication method whereby

various apparatuses connected to a network can be efficiently and exactly managed, and a storage medium on which are stored computer readable and executable steps for implementing such a management process.

5           It is one more objective of the present invention to provide a communication apparatus that can efficiently and accurately manage various apparatuses connected to a network.

10           It is another objective of the present invention to provide a communication system wherein, when an immediately available local apparatus and another apparatus that is accessible across a network are employed to perform a service, the service is available only to an authorized user whose right to use the  
15           apparatuses has been authenticated.

          It is an additional objective of the present invention to provide a communication system wherein, when a service is requested for which an immediately available local apparatus and another apparatus that is  
20           accessible across a network are used, the performance of a user authentication process can be improved.

          It is a further objective of the present invention to provide a communication system wherein, when the scanner function of an immediately available local  
25           apparatus and the printer function of another apparatus accessible across a network are employed to perform a copy service, the service is available only to an

authorized user whose right to use the apparatuses has been authenticated.

It is one further objective of the present invention to provide a communication system wherein, when the scanner function of an immediately available local apparatus and the printer function of another apparatus accessible across a network are employed to perform a service, the performance of a user authentication process can be improved.

It is yet one more objective of the present invention to provide a communication system wherein, when the scanner function of an immediately available local apparatus and the storage function of another apparatus accessible across a network are employed to perform a storage service, the service is available only to an authorized user whose right to use the apparatuses has been authenticated.

It is yet another objective of the present invention to provide a communication system wherein, when the scanner function of an immediately available local apparatus and the storage function of another apparatus accessible across a network are employed to perform a storage service, the performance of a user authentication process can be improved.

It is yet an additional objective of the present invention to provide a communication system wherein, when the scanner function of an immediately available

local apparatus and the facsimile function of another apparatus accessible across a network are employed to perform a facsimile transmission service, the service is available only to an authorized user whose right to  
5 use the apparatuses has been authenticated.

It is yet a further objective of the presents invention to provide a communication system wherein, when the scanner function of an immediately available local apparatus and the facsimile function of another  
10 apparatus accessible across a network are employed to perform a facsimile transmission service, the performance of a user authentication process can be improved.

To achieve the above objectives, according to the  
15 present invention, an apparatus, which performs a service in association with a different apparatus accessible across a network, comprises:

registration means for registering in advance predetermined information for a user who is authorized  
20 to use the apparatus;

input means for use by the user to enter the user information and a first operating instruction request for the different apparatus;

first authentication means for employing the  
25 predetermined information registered by the registration means and the user information entered by the user at the input means to determine whether the



user is an authorized user;

transmission means for, based on the results obtained by the authentication means, transmitting to the different apparatus a second operating instruction and the user information that are entered at the input means;

second authentication means for obtaining from the different apparatus the results of an authentication process, performed for the user information received from the transmission means, to determine whether the user is authorized to use the different apparatus; and

determination means for employing the results obtained by the second authentication means to determine whether the user is to be permitted to use the service.

Furthermore, to achieve the above objectives, according to the present invention, an apparatus that performs a service in cooperation with a different apparatus accessible across a network, comprises:

registration means for registering, in advance, predetermined information for a user who is permitted to use the apparatus;

reception means for receiving user information and an operating instruction request for the apparatus, both of which are entered by a user at the different apparatus on the network;

authentication means for employing the information

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registered by the registration means and the user information received by the reception means to determine whether the user is an authorized user; and

determination means for employing the results  
5 obtained by the authentication means to determine whether the operating instruction request received by the reception means is to be accepted.

The other objectives and features of the present invention will become apparent during the explanation  
10 given for the following specifications while referring to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram illustrating the  
15 hardware arrangement of an image processing apparatus according to the present invention;

Fig. 2 is a diagram showing the external appearance of a scanner and a printer, image input/output devices for the image processing  
20 apparatus;

Fig. 3 is a diagram showing the external appearance of an operation unit in the image processing apparatus;

Fig. 4 is a block diagram illustrating the  
25 arrangement of a scanner image processor in the image processing apparatus;

Fig. 5 is a block diagram illustrating the

arrangement of a printer image processor in the image processing apparatus;

Fig. 6 is a block diagram illustrating the arrangement of an image compression processor in the  
5 image processing apparatus;

Fig. 7 is a block diagram illustrating the arrangement of an image rotation processor in the image processing apparatus;

Fig. 8 is a diagram for explaining the  
10 transmission of data to the image rotation processor;

Fig. 9 is a diagram for explaining the image rotation process performed by the image rotation processor;

Fig. 10 is a block diagram showing the structure  
15 of a device I/F in the image processing apparatus;

Fig. 11 is a diagram for explaining a network system, including the image processing apparatus;

Fig. 12 is a diagram for explaining the function (module) of the image processing apparatus performed by  
20 software;

Fig. 13 is a diagram for explaining an application installed in the image processing apparatus;

Fig. 14 is a diagram for explaining an operating screen displayed by the LCD display device of the  
25 operation unit;

Fig. 15 is a diagram for explaining an ID input screen displayed by the LCD display device;



search screen on the address book screen;

Fig. 29 is a diagram for explaining a search  
object class list on the address book screen;

Fig. 30 is a diagram for explaining a search  
5 object attribute list on the address book screen;

Fig. 31 is a diagram for explaining a search  
object condition list on the address book screen;

Fig. 32 is a diagram for explaining a search  
object address book list on the address book screen;

10 Fig. 33 is a diagram for explaining search results  
displayed on the address search screen;

Fig. 34 is a diagram for explaining a detailed  
address (New) screen on the SEND main screen;

Fig. 35 is a diagram for explaining a 10-key pad  
15 on each screen displayed by the LCD display device;

Fig. 36 is a diagram for explaining a detailed  
address (Person) on the SEND main screen;

Fig. 37 is a diagram for explaining a detailed  
address (Database) on the SEND main screen;

20 Fig. 38 is a diagram for explaining a detailed  
address (Group) on the SEND main screen;

Fig. 39 is a diagram for explaining a hard disk  
setting screen on the SEND main screen;

Fig. 40 is a diagram for explaining a print  
25 setting screen on the SEND main screen;

Fig. 41 is a diagram for explaining a paper size  
list on the print setting screen;

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Fig. 64 is a diagram for explaining the software structure of the scanning operation;

Figs. 65A and 65B are diagrams for explaining the contents of the data used to manage the scanning operation;

Fig. 66 is a block diagram illustrating the arrangement of the devices employed for the printing operation performed by the image processing apparatus;

Fig. 67 is a diagram for explaining setup entries when an engine I/F serves as the device I/F;

Fig. 68 is a diagram for explaining the entries in the DRAM in the engine I/F;

Fig. 69 is a diagram for explaining the timing of the printing operation;

Fig. 70 is a block diagram illustrating the arrangement of the devices employed for the user authentication process performed by the image processing apparatus;

Fig. 71 is a diagram for explaining a user registration table used for the user authentication process;

Fig. 72 is a flowchart for explaining the user authentication processing performed in response to a log-on;

Fig. 73 is a flowchart for explaining the processing performed following a log-on, beginning with the scanning operation and ending with the printing operation;

Fig. 74 is a flowchart for explaining the



processing following a log-on, beginning with the scanning operation and ending with the storage operation; and

Fig. 75 is a flowchart for explaining the processing following a log-on, beginning with the scanning operation and ending with the facsimile transmission operation.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment of the present invention will now be described while referring to the accompanying drawings.

Fig. 1 is a diagram illustrating the hardware arrangement of an image processing apparatus 100 according to the present invention.

As is shown in Fig. 1, the image processing apparatus 100 comprises a control unit 110, for the input and the output of image information and device information, an operation unit 132, a scanner 133, which is an image input device, and a printer 135, which is an image output device, all of which are connected to the control unit 110. The control unit 110 is connected both to a LAN (Local Area Network) 128 and to a WAN (Wide Area Network) by a public telephone line.

The control unit 110 comprises: a CPU 111, for providing overall control for the image processing

apparatus 100; a RAM 112, which includes a system work memory for controlling various operations performed by the CPU 111, and an image memory, for temporarily storing image data; a ROM (boot ROM) 113, which is used  
5 for storing a boot program for the image processing apparatus 100; an HDD (Hard Disk Drive) 114, used for storing image data and software for the apparatus 100; an operation unit I/F 116, which functions as an interface for the operation unit (UI) 132; a network  
10 I/F 117, for the input and the output of information via the LAN 128; and a modem 118, for the input and the output of information via the WAN 129. All of these components are connected together by a system bus 119.

With this arrangement, the operation unit I/F 116  
15 outputs image data to the operation unit 132 for the display on the display section of the operation unit 132, which will be described later, or transmits to the CPU 111 information entered at the operation unit 132 by a user.

20 In addition to the above described arrangement, the control unit 110 further comprises: a raster image processor (RIP) 121, for developing a PDL record to provide a bit map image; a device I/F 122, which functions as an interface for the scanner 133 and the  
25 printer 134; a scanner image processor 123, for correcting, processing or editing image data entered by the scanner 133; an image rotation processor 125, for

rotating image data; and an image compression processor 126, for compressing or decompressing multi-valued image data using the JPEG method, and binary image data using the JBIG, MMR or MH method. These components are  
5 connected together by an image bus 120.

With this arrangement, the device I/F 122 permits the scanner 133 and the printer 134 to communicate with the control unit 110, so that synchronization of image data is changed to asynchronization or vice versa.

10 In the control unit 110, data are exchanged between the system bus 119 and the image bus 120 via an image bus I/F 115.

The image bus I/F 115 is a bus bridge that performs the high speed transmission of image data and  
15 that changes the data structure. The image bus 120 is constituted by a PCI (Peripheral Communication Interface) bus or an IEEE1394 bus.

The hardware arrangement of the essential portion of the image processing apparatus 100 will now be  
20 specifically described.

[Image input/output section: scanner 133 and printer 134]

Fig. 2 is a diagram illustrating the external appearance of the scanner 133 and the printer 134,  
25 which are image input/output devices.

When using the scanner 133, which is an image input device, first, a user places a document on a tray

152 of a document feeder 151. Then, to start the reading of the document, the user enters an instruction at the operation unit 132. This instruction is transmitted by the CPU 111 to the scanner 133 (see  
5 arrows 130 in Fig. 1). Subsequently, the feeder 151 feeds individual sheets of the document into the scanner 133.

In the scanner 133, an image on the document sheet is irradiated (not shown) and scanned by a CCD line  
10 sensor (not shown), and the scanned data are converted into electric signals representing raster image data. The raster image data for the document sheet, which are obtained by the scanner 133, are transmitted to the device I/F 122 (see the arrows 130 in Fig. 1).

15 The arrows 130 in Fig. 1 represent the flow of the transmission of data or instructions between the device I/F 122 and the scanner 133.

For the printer 134, which is an image output device, a plurality of paper supply levels are provided  
20 to enable the selection of different paper sizes, or a different paper direction, and corresponding paper cassettes 162, 163, 164 and 165 are provided. A paper discharge tray 161 is used to hold printed sheets.

The thus structured printer 134 is activated when  
25 an instruction is received from the CPU 111 (see arrows 131 in Fig. 1). The printer 134 receives the raster image data from the CPU 111, and employs (converts) the

data to form an image on a supplied sheet. For this process, electrophotography, using a photosensitive drum or a photosensitive belt, or the ink-jet printing method, for the direct printing of an image by the ejection of ink from arrays of tiny nozzles, is employed

The arrows 131 in Fig. 1 represent the flow of the transmission of data or instructions between the device I/F 122 and the printer 134.

[Operation unit 132]

As is shown in Fig. 3, an LCD display device 171, a start key 172, a stop key 173, an ID key 174, a reset key 175 and an LED 176 are provided for the operation unit 132.

For the LCD display device 171, a touch panel sheet is attached to an LCD. A screen for the performance of various operations by the apparatus 100 is displayed on the LCD, and when a key on the display is depressed, that positional information is transmitted to the CPU 111.

The start key 172 is used to initiate the scanning of a document image. An LED 176, which consists of green and red LEDs, is located in the center of the start key 172, and the color of the LED that is turned on is used to notify a user that use of the start key 172 is enabled or disabled.

The stop key 173 is used to halt a currently

running operation.

The ID key 174 is used by a user to enter his or her ID (user ID).

The set key 175 is used to initialize various  
5 setups entered at the operation unit 132.  
[Scanner image processor 123]

In the scanner image processor 123, as is shown in Fig. 4, a filter unit 182, an editing unit 183, a variable scale unit 184, a table 185 and a binarization  
10 unit 186 are connected to an image bus I/F 181.

The image bus I/F 181 is connected to the image bus 120, and has as one function the control of the bus access sequence, and has as another function the control of the individual devices of the scanner image  
15 processor 123 and the generation of an operating timing.

The filter unit 182 employs a spatial filter to perform convolution calculations for image data read by the scanner 133.

20 The editing unit 183 employs the image data read by the scanner 133 to identify a closed area defined by a marker pen, and performs image processing, such as shading, dotting or negative/positive inversion, for image data in the closed area.

25 The variable scale unit 184 performs interpolation for the primary scanning direction of the raster image and enlarges or reduces an image in order to change the

The table 185 is used to convert image data (luminance data) read by the scanner 133 into density data.

The image data that have been processed by the above individual sections are transmitted via the image bus I/F 181 to the image bus 120.

As is shown in Fig. 5, in the printer image processor 124, a resolution converter 192 and a smoothing unit 193 are connected to an image bus I/F controller 191.

The resolution converter 192 receives image data from the network I/F 117 or the WAN 129, and converts

them to provide a resolution that can be used by the printer 134.

The smoothing unit 193 removes jaggies (stairstepped or saw-toothed effects that appear at a monotone border in an image) for the image data that have been processed by the resolution converter 192, and provides an image with smooth edges.

[Image compression processor 126]

As is shown in Fig. 6, the image compression processor 126 comprises: an input buffer 202; an image compression unit 203, for receiving the output of the input buffer 202; a RAM 204, which is connected to the image compression unit 203; and an output buffer 205, for receiving the output of the image compression unit 203. The input buffer 202 and the output buffer 205 are connected to an image bus I/F controller 201.

The image bus I/F controller 201, which is connected to the image bus 120, has as one function the control of the bus access sequence, and has as another function the control of the timing for the exchange of data with the input buffer 202 and the output buffer 205 and the setting of a mode for the image compression processor 126.

In the following manner, the image compression unit 203 compresses image data received from the input buffer 202.

First, the CPU 111 sets up, via the image bus 120,



image compression control for the image bus controller I/F 201. Using this setup, the image bus I/F controller 201 performs for the image compression unit 203 the setup required for image compression, i.e.,  
5 designates a compression method, such as MMR compression or JBIG compression.

After completing these setups, the CPU 111 permits the image bus I/F controller 201 to receive image data. In accordance with the permission granted to receive  
10 image data, the image bus I/F controller 201 receives image data from the RAM 204 from other devices via the image bus 120.

The image data received by the image bus I/F controller 201 are temporarily stored in the input  
15 buffer 202, and, in accordance with a request for image data that is issued by the image compression unit 203, are output at a constant speed to the image compression unit 203 .

At this time, the input buffer 202 determines  
20 whether image data can be transmitted between the image bus I/F controller 201 and the image compression unit 203. If the reading of image data from the image bus 120 and the output (the writing) of image data to the image compression unit 203 are disabled, the input  
25 buffer 202 halts the transmission of data (this control is hereinafter called "handshaking").

Upon receiving image data from the input buffer

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202, the image compression unit 203 temporarily stores the image data in the RAM 204, and compresses the image data in accordance with the setup of the image bus I/F controller 201.

5       The image data are temporarily stored in the RAM  
204 because data for several lines are required,  
depending on the type of image compression process, and  
because data for the first line can not be compressed  
until data for several lines have been prepared.

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10      The image data compressed by the image compression
      unit 203 are immediately transmitted to the output
      buffer 205.

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The output buffer 205, as well as the input buffer 202, performs handshaking, and transmits the compressed image data from the image compression unit 203 to the image bus I/F controller 201.

The image bus I/F controller 201 transmits the received image data to the RAM 112 or to the individual devices via the image bus 120.

20           The series of processes described above is  
repeated so long as the CPU 111 permits the image bus  
I/F controller 201 to transmit image data (until the  
processing of image data for necessary pages is  
completed), or until the image compression unit 203  
25           issues a stop request because an error occurred during  
the compression.

In the above explanation, the image compression

[Image rotation processor 125]

As is shown in Fig. 7, the image rotation

The image bus I/F controller 211, which is

In the following manner, the image rotation unit

First, the CPU 211 designates image rotation

Following the completion of these designations,

transmit image data. In accordance with this permission, the image bus I/F controller 211 receives image data from the RAM 204 and the individual devices via the image bus 120.

5        Assume that the image data to be transmitted are 32-bit data for a binary image, that the image rotation unit 212 performs the image rotation process for each block of  $32 \times 32$  bits, and that image data for each 32 bits are transmitted to the image bus 120.

10        In this case, as is shown in Fig. 8, the transmission of 32 bits of data from the image bus I/F controller 211 to the image rotation unit 212 is performed 32 times and at discontinuous addresses (discontinuous addressing), so that the image rotation  
15        unit 212 obtains data  $B_x$  for one block for image rotation.

         The image rotation unit 212 writes the received image data in the RAM 213, so that when read the image data are rotated at a desired angle, as is shown in  
20        Fig. 9. Specifically, for the counterclockwise rotation direction of 90 degrees, for example, the first received 32-bit data are written in the Y direction. Therefore, to read the 32-bit data from the RAM 213, the data are read in the X direction, so that  
25        an image is rotated.

         When  $32 \times 32$  bits of image data have been written in the RAM 213 (image rotation has been completed), the

image rotation unit 212 reads the image data from the RAM 213 in the above described manner, and transmits them to the image bus I/F controller 211.

Through continuous addressing, the image bus I/F controller 211 transmits the received image data to the RAM 112 or to individual devices via the image bus 120.

The series of processes described above is repeated so long as the CPU 111 permits the image bus I/F controller 211 to transmit image data (until the processing of image data for necessary pages has been completed).

[Device I/F 122]

As is shown in Fig. 10, the device I/F 122 comprises: a serial to parallel/parallel to serial converter (hereinafter referred to simply as a converter) 223 and a scan buffer 222, both of which receive the output of the scanner 133, and a parallel to serial/serial to parallel converter (hereinafter referred to simply as a converter) 224 and a print buffer 225, both of which receive the output of the printer 134. The converters 223 and 224 are connected to an image bus I/F controller 221.

The image bus I/F controller 221, which is connected to the image bus 120, has a function for the control of the bus access sequence, a function for the control of the individual devices in the device I/F 122 and the generation of an operating timing, and a

function for the generation of a control signal for the scanner 133 and the printer 134.

The scan buffer 222 is used to temporarily hold image data received from the scanner 133, and to output  
5 the image data in synchronization with the operating timing for the image bus 120.

The converter 223 arranges image data received from the scan buffer 222 in a predetermined order, or separates the image data and rearranges them so that  
10 they have a width that is suitable for transmission to the image bus 120.

The converter 224 separates the image data received from the image bus 120, or rearranges them, so that they have a width that can be stored in the print  
15 buffer 225.

In the print buffer 225, the image data obtained by the converter 224 are stored temporarily, and are synchronously output to the printer 134.

While an image is being scanned by the scanner  
20 133, the following processing is performed by the device I/F 122.

First, in synchronization with a timing signal output by the scanner 133, the image data transmitted by the scanner 133 are temporarily stored in the scan  
25 buffer 222.

At this time, if a PCI bus, for example, is employed as the image bus 120, and 32 bits or more of

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If an IEEE1394 bus is employed as the image bus

120, serial image data are transmitted from the image bus 120 to the image bus I/F controller 221. The image bus I/F controller 221 then transmits the received image data to the converter 224.

5           The converter 224 converts the received image data into image data that correspond to the number of data bits input for the printer 134, and temporarily stores them in the print buffer 225.

          The image data that are stored in the print buffer  
10       225 are transmitted to the printer 134 in a first-in and first-out manner in synchronization with a timing signal output by the printer 134.

          The hardware arrangement of the essential portion of the image processing apparatus 100 has been  
15       explained.

          The software arrangement of the image processing apparatus will now be described.

[Overall system configuration]

          Fig. 11 is a diagram showing the location of the  
20       image processing apparatus 100 in a network system.

          As is described above, the image processing apparatus 100 comprises the scanner 133 and the printer 134, and can read image data from the scanner 133 and transmit them to the LAN 128, or can receive image data  
25       via the LAN 128 and print them using the printer 134.

          Furthermore, the image processing apparatus 100 can employ facsimile (FAX) transmission means (not



shown) to transmit image data that are read by the scanner 133 via a PSTN or ISDN 244 to a facsimile machine (FAX) 231, and can employ the printer 134 to print image data received via the PSTN or the ISDN 244.

5           In addition to the image processing apparatus, a  
database server 232, a database client 233, an E-mail  
client 234, an E-mail server, a WWW (World Wide Web)  
server 236, a DNS (Domain Name System) server 237, a  
printer 238 and a router 245 are connected to the LAN  
10 128.

Further, an image processing apparatus 100' having the same structure as the image processing apparatus 100, a database server 240, a WWW server 241 and an E-mail server 242 are connected to the router 245.

15           The database server 232 manages, as a database,  
image data (data for a binary image or a multi-valued  
image) that are read by the image processing apparatus  
100 (specifically, by the scanner 133).

The database client 233, which is a client of the  
20 database server 232, can read and search through image  
data managed by the database server 232.

The E-mail server 235 can receive, as information  
attached to an E-mail, image data read by the image  
processing apparatus 100 (specifically, by the scanner  
133).

The E-mail client 234, which is a client of the E-mail server 235, can receive and read E-mail

transmitted to the E-mail server 235, or can transmit E-mail.

The WWW server 236 provides an HTML (Hyper Text Markup Language) document for the LAN 128. The HTML  
5 document provided by the WWW server 236 can be printed by the image processing apparatus 100 (specifically, by the printer 134).

The router 245 is used to link the LAN 128 with the Internet/Intranet 243.

10 The image processing apparatus 100', the database server 240, the WWW server 241 and the E-mail server 242, all of which are connected via the Internet/Intranet 243 to the router 245, have the same respective functions as have the image processing  
15 apparatus 100, the database server 232, the WWW server 236 and the E-mail server 235.

The image processing apparatus 100 can exchange data with the facsimile machine 231, and also with the printer 238 via the LAN 128. Therefore, the image  
20 processing apparatus 100 can also employ the printer 238 to print image data that it has read.

[Overall software configuration]

Fig. 12 is a block diagram illustrating the functions (modules) of the image processing apparatus  
25 100 which are implemented by software.

A user interface (UI) module 251 manages a user interface, and intercedes with the apparatus 100 when

an operator enters commands for various operations and setups at the operation unit 132.

In accordance with the manipulation performed at the operation unit 132 (the entry of an instruction by an operator), to request a process or to set data the UI module 251 transmits the input information to individual modules that will be described later.

A database module 252 manages an address book, i.e., data transmission destinations or communication destinations. The UI module 251 adds data to, deletes data in, and extracts data from the address book that is managed by the database module 252. The UI module 251 employs the address book when, in accordance with information entered at the operation unit 132, information for a data transmission destination or a communication destination is transmitted to the individual modules that will be described later.

A web server (Device Management, Accounting) module 253 is employed to provide management information for the apparatus 100 in response to a request from a Web client (not shown). The management information is read by a control API module 268, which will be described later, and is transmitted to the Web client via an HTTP communication module 262, a TCP/IP communication module 266 and a network driver 267, which will be described later.

A data distribution (Universal Send) module 254,

which controls the distribution of data, in accordance with an instruction entered by an operator, distributes (transmits) data to a communication (output) destination specified in the instruction. When an operator employs the scanner 133 (the scanner function) of the apparatus 100 to instruct the generation of distributed data, the universal send module 254 permits the control API module 268 to activate the apparatus 100 for the generation of distributed data.

A printer (P550) module 255 is executed when a printer (e.g., the printer 238) is designated an output destination by the universal send module 254.

An E-mail module 256 is executed when an E-mail address is designated a communication destination by the universal send module 254.

A database (DB) module 257 is executed when a database (the database server 232) is designated an output destination by the universal send module 254.

A DP module 258 is executed when an apparatus (the image processing apparatus 100') that corresponds to the apparatus 100 is designated an output destination by the universal send module 254.

A remote copy scan module 259 employs the scanner 133 (scanner function) of the apparatus 100 to perform the copy function, as is performed independently by the apparatus 100, while designating, as an output destination, another apparatus (e.g., the image

processing apparatus 100') connected to the network.

A remote copy print module 260 employs the printer 134 (printer function) of the apparatus 100 to perform the printing function, as is performed independently by the apparatus 100, while designating, as an input destination, another apparatus (e.g., the image processing apparatus 100') connected to the network.

A Web print module 261 reads and prints information found on various home pages on the Internet or the Intranet.

An HTTP communication module 262 is used when the apparatus 100 performs communication using HTTP, and provides communication for the Web server module 253 and the Web print module 261 using a TCP/IP communication module 266 that will be described later.

An LPR (Line Printer Daemon) module 263 provides communication for the printer module 255 in the universal send module 254 using the TCP/IP communication module 266 that will be described later.

An SMTP (Simple Mail Transfer Protocol) module 264 provides communication for the E-Mail module 256 in the universal send module 254 using the TCP/IP communication module 266.

An SLM (Salutation-Manager or Smart Link Manager) module 265 employs the TCP/IP communication module 266 to provide communication for the DB module 257 and the DP module 258 in the universal send module 254, the

remote copy scan module 259, and the remote scan print module 260.

The TCP/IP communication module 266 employs a network driver 267, which will be described later, to  
5 provide network communication for the various modules described above.

The network driver 267 controls a portion that is physically connected to the network.

The control API module 268 provides, for an  
10 upstream module, such as the universal send module 254, an interface with a downstream module, such as a job manager module 269 that will be described later. Therefore, the dependency between the upstream and the downstream modules is reduced and the diversity of each  
15 module is enhanced.

The job manager module 269 interprets a process instruction received from each of the above modules through the control API module 268, and transmits an instruction to individual modules that will be  
20 described later. The job manager module 269 collectively manages the hardware processing performed in the apparatus 100.

A codec manager module 270 controls various data compression and decompression processes as instructed  
25 by the job manager module 269.

An FBE encoder 271 compresses, in accordance with an FBE format, data that are read during the scanning

process by the job manager module 269 and a scanner manager module 274.

5 A JPEG compression/decompression unit (codec manager) 272 employs the JPEG method to compress the data read during the scanning process performed by the job manager module 269 and the scanner manager module 274, and to develop (decompress) print data during the printing process performed by the printer manager module 276. An MMR compression/decompression unit (MMR  
10 codec) 273 employs the MMR method to compress data read during the scanning process performed by the job manager module 269 and the scanner manager module 274, and to develop (decompress) print data during the printing process performed by the printer manager  
15 module 276.

The scanner manger module 274 controls the scanning process instructed by the job manager module 269.

20 A SCSI driver 275 communicates with the scanner manager module 274 and with the scanner 133 that is internally connected to the apparatus 100.

The printer manager module 276 controls a printing process instructed by the job manager module 269.

25 An I/F (engine I/F) driver 277 serves as an I/F between the printer manager module 276 and the printer 134 (printing unit).

A parallel port driver 278 provides an I/F when

00000000.00000000

[Application]

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An application 288 (Remote Print Device) is an application for a remote print reception side (the



remote copy print module 260 in Fig. 12).

An application 289 (Notes Server) is an application that controls the Notes Server which stores, in a database, image data that are

An application 290 (Original Image DB Server1) is an application for storing, in a database, binary image data that are simultaneously distributed by the application 283.

An application 291 (Mail Server) is an application that controls the Mail Server which stores, in a file, image data that are simultaneously distributed by the application 283.

An application 292 (Original Image DB Server2) is an application for storing, in a database, multi-valued image data that are simultaneously distributed by the application 283.

An application 293 (Web Server) is an application for the Web Server that includes information contents.

The UI (user interface) and the address book 252



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It should be noted that "SLM" is one type of network protocol that includes device control information called "Salutation Manager" or "Smart Link Manager".

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The application 283, unlike the application 282 (Remote Copy), can simultaneously transmit, to a plurality of distribution destinations, image data that are obtained through the scanning of one image by the

scanner 133. Further, the image data can be transmitted not only to the printer but also directly to a so-called server computer.

5 An example distribution process in accordance with the type of distribution destination device will be explained.

Assume that it is determined from data in the address book 252 that a distribution destination device can process the LPD (Line Printer Daemon), which is a network printer protocol, and an LIPS, which is a printer control command. First, the resolution available for the device that is designated a distribution destination is obtained from the address book 252. In accordance with the results obtained, the image data read by the scanner 133 are compressed using the FBE (First Binary Encoding) method. The compressed image data are then LIPS coded, and the resultant image data are transmitted to the destination by the LPR module 263 (in accordance with the LPR that is a network printer protocol).

If it is determined from data in the address book 252 that the destination device is a server device for which the SLM can be used for communication, the server address and the designated folder in the server are identified. Then, as does the application 282, the application 283 employs the MMR method to compress image data (binary image data) obtained by the scanner

133. The compressed image data are formatted in  
accordance with the TIFF (Tagged Image File Format),  
and the resultant data are stored by the SLM module 265  
in a specific folder in the server device on the  
5 network.

If it is determined from data in the address book  
252 that the destination device is a server device that  
can process image data compressed using the JPEG method  
(multi-valued image data), the server address and the  
10 designated folder in the server are identified by  
referring to the address book 252. Then, in the same  
manner as that used for the binary image data, the  
multi-valued image data read by the scanner 133 are  
compressed using the JPEG method. The compressed image  
15 data are then formatted in accordance with the TIFF,  
and the resultant data are stored by the SLM module 265  
in a specific folder in the server device on the  
network.

If it is determined from data in the address book  
20 252 that the destination device is a device on the E-  
mail server side, a mail address is obtained from the  
address book 252. Then, binary image data read by the  
scanner 133 are compressed using the MMR method.  
Thereafter, the compressed image data are formatted in  
25 accordance with the TIFF, and the resultant image data  
are transmitted to the E-mail server by the SMTP module  
264. The application 291 (Mail Server) is employed for

5           An explanation will now be given for screens on  
the LCD display device 171 of the operation unit 132 of  
the image processing apparatus 100, the manipulation of  
devices on the screens, and the accompanying  
processing.

The functions available with the image processing apparatus 100 are assigned to six primary functional categories: a copy function (Copy), a transmission function (Send), a printing function (Retrieve), a task function (Tasks), an information management function (Management) and a setup function (Configuration). These functions correspond to six main tabs that are displayed at the top of an operation screen 301 shown in Fig. 14: "COPY" 302, "SEND" 303, "RETRIEVE" 304, "TASKS" 305, "MGMT" 306, and "CONFIG" 307.

Therefore, when a user selects one of the main tabs 302 to 307 that corresponds to a desired function, the operation screen 301 is changed to a screen for a corresponding category. If the switching to a screen for another category is not permitted, i.e., if the execution of another function is not permitted, the display colors of the main tabs 302 to 307 are changed

The copy function "COPY" includes a function for employing the scanner 133 of the apparatus 100 and the printer 134 to copy data contained in a document (hereinafter referred to as document data), and a function (hereinafter also referred to as a remote copy function) for employing the scanner 133 and the printer 238 (remote printer) on the network to copy document data.

The transmission function "SEND" transmits document data read by the scanner 133 to the E-mail server 235, the printer 238, the facsimile machine 231, the file transmitter (FTP) and the database server 232.

15 At this time, a plurality of addresses can be designated.

The printing function "RETRIEVE" externally obtains document data, and prints them using the printer 134 of the apparatus 100. The WWW, E-mail, file transmission, and the facsimile machine 231 can be employed as means for obtaining the document data.

The task function "TASKS" generates and manages a task for the automatic processing of document data externally received via the facsimile machine 231 or 25 the Internet, and for periodically executing the above printing function.

The information management function "MGMT" manages

a job address book, a book mark, and document account information.

The setup function "CONFIG" sets the configuration of the apparatus 100 (the network or the timer).

5 [ID input screen]

Immediately after the image processing apparatus 100 is powered on, or when an ID key is depressed, the ID input screen 311 shown in Fig. 15 is displayed.

6622060"0936366  
10 The ID input screen 311 includes an ID input box 312, a password input box 313, a number key box 314 and an OK button 315.

First, a user employs the number keys 314 to enter a correct user ID and a password in the ID input box 312 and the password input box 313, and depresses the  
15 OK button 315. Then, the operation screen 301 in Fig. 14 is displayed to enable the manipulation of devices on that screen.

The ID input box 312 and the password input box 313 can be switched by directly designating a desired  
20 area to input.

[COPY screen]

Fig. 16 is a diagram showing the COPY main screen 321 that is displayed upon the depression of the main tab "COPY" 302.

25 The COPY main screen 321 includes a printer select button 324, a printer display box 323, an image quality select button 326, an image quality display box 325, a



copy parameter display box 322, scale setting buttons 327 and 328, a paper select button 329, a sorter setting button 331, a double-sided copy setting button 333, a density indicator and a density setting button 330, and a number key box 335.

When, for example, the printer select button 324 is selected, as is shown in Fig. 17, a list 341 of available printers (the printer 134 of the apparatus 100 and the printer 238 on the network) is displayed as a pull-down menu. When a desired printer is selected from the printer list 341, the printer list 341 disappears, and as is shown in Fig. 16, the selected printer name is displayed in the printer display box 323.

If the image quality setup button 326 is selected, as is shown in Fig. 18 an image quality list 342 is displayed as a pull-down menu. When a desired image quality is selected from the image quality list 342, the image quality list 342 disappears, and as is shown in Fig. 16, the selected image quality is displayed in the image quality display box 325.

If the scale setting button 327 or 328, the paper select button 329, the sorter setting button 331 and the double-sided copy setting button 333 are depressed as needed, corresponding sub-screens are displayed. That is, upon the depression of the scale setting button 327 or 328, the enlarge/reduce setting

sub-screen 343 in Fig. 19 is displayed; upon the depression of the paper select button 329, the paper select sub-screen 344 in Fig. 20 is displayed; upon the depression of the sorter setting button 331, the sorter setting sub-screen 345 in Fig. 21 is displayed; and upon the depression of the double-sided copy setting button 333, the double-sided copy setting sub-screen 346 in Fig. 22 is displayed. The individual parameters for the corresponding sub-screens can thereafter be set. Furthermore, upon the depression of the density inductor and density setting button 330, the density can be designated.

As is described above, the user sets the various parameters, returns the screen to the COPY main screen 321 in Fig. 16, and depresses a start button 339. Thus, the scanner 133 is activated to read document data, and the document data are transmitted to a selected printer, which prints a copy in accordance with the various designated parameters that are displayed on the COPY main screen 321 in Fig. 16.

[SEND screen]

Fig. 23 is a diagram showing the SEND main screen 351 that is displayed upon the depression of the main tab "SEND" 303.

The SEND main screen 351 includes an address display box 352, a detailed address count display box 353, an address scroll button 354, an address book

button (AddBook) 358, a new button (New) 359, an edit button (Edit) 360, a delete button (Delete) 361, a subject input box (Subject) 355, a message input box (Message) 356, a file name input box (File Name) 357, a  
5 cover page check button (Cover Page) 362, an HD check button (Put Into HD) 363, a print out check button (Print Out) 364, and a scanner check button (Scan Setting) 365.

At the time of initialization, including  
10 resetting, the SEND initial screen 371 in Fig. 24 is displayed. On the SEND initial screen 371, operating instructions are displayed but no address is shown in the address display box 352.

When the address book button 358 is depressed, as  
15 is shown in Fig. 23 a list of input addresses is displayed in the address display box 352, a process which will be described in detail later. When the new button 358 is depressed, a new address can be added, another process which will also be described in detail  
20 later. The new address is displayed at the end of the list.

The number of addresses that are currently entered is displayed in the detailed address count display box 353.

25 To delete a specific address from the list of currently entered addresses, the address must be selected in the address display box 352, and the delete

button 361 depressed. The selected address then is deleted.

For the subject input box 355, the message input box 356 and the file name input box 357, the full  
5 keyboard 381 shown in Fig. 25 is displayed upon the selection of one of these boxes to enable the input of a corresponding entry.

As is described above, the user selects the address, inputs a message for the address, and  
10 designates the transmission method that is to be used. Then, the user depresses the start button 366 on the SEND main screen 351 in Fig. 23, so that the scanner 133 is activated and reads the document data. The designated transmission method then transmits the  
15 document data to the selected address.  
[Address book sub-screen]

When the address book button 358 is depressed on the SEND main screen 351 in Fig. 23, the address book sub-screen 391 in Fig. 26 is displayed.

20 By depressing an OK button 399, an address having a select check mark 393 in an address book display box 392 on the address book sub-screen 391 is added to the address display box 352 of the SEND main screen 351.

Upon the depression of one of the sorting set  
25 buttons 395 to 397, the addresses (items) in the address book display box 392 are sorted by class, alphabetically by name in the ascending order, or

alphabetically by name in the descending order.

If a detailed information button (Detail) 396 is depressed while one of the items in the address book display box 392 is selected, the detailed information screen 401 in Fig. 27 is displayed.

On the detailed information screen 401, all the information obtained from the address book 252 is displayed for the selected item.

To close the address book sub-screen 391, the OK button 399 or a cancel button 398 must be depressed. Thereafter, the address book sub-screen 391 will be closed and the SEND main screen 351 displayed.

[Search sub-screen]

When a search button (Search) 395 is depressed on the address book sub-screen 391 in Fig. 26, the search sub-screen (address search screen) 411 in Fig. 28 is displayed.

The search sub-screen 411 is used to perform a search of the address book 252 (a local address book) and an external address server to obtain an address. The upper portion on the screen is a search condition setting portion.

When a search object class set button 417 is depressed, the search object class list 431 in Fig. 29 is displayed. After a desired search object class has been selected from the list 431, it is displayed in a search object class display box 416.

Upon the depression of a search object attribute setting button 419, the search object class attribute list 441 in Fig. 30 is displayed. The attributes included in the list 441 are changed as follows in accordance with the search object class displayed in the search object class display box 416.

Common Name·Address·Country (Class: Person)

Common Name·Owner·Location·Model·Type·Resolution

·Color·Finisher (Class: Printer)

Common Name·Member (Class: Group)

All the attributes (Class: Everything)

When a search object condition set button 421 is depressed, the search object condition list 451 in Fig. 31 is displayed. After a desired condition has been selected from the list 451, it is displayed in the search object condition display box 420.

Upon the depression of a search object address book set button 424, the search object address book list 461 in Fig. 32 is displayed. After a desired address book has been selected from the list 461, it is displayed in the search object address book display box 423.

Therefore, the currently selected search conditions are displayed in the search object class display box 416, the search object attribute display box 418, the search object condition display box 420, and the search object address book display box 423.

When a search object attribute value input box 422 is selected, the full keyboard 381 in Fig. 25 is displayed for the entry of a value.

Upon the depression of a search execution button (Do Search) 425, a search is initiated in accordance with the various search conditions that have been selected. The search results are displayed in a search result display box 412 on the screen 471 in Fig. 33, and the number of search result entries is displayed in a search result count display box 415.

When one of search result items in the search result display box 412 is selected and the detailed information button (Detail) 426 is depressed, the detailed information sub-screen 401 in Fig. 27 is displayed for the selected item. If a specific search result item that is displayed is to be added as an address, as is shown in Fig. 33, a select check mark is added to the desired item and an OK button 428 is depressed. Then, the search sub-screen 471 (411) is closed, the SEND main screen 351 in Fig. 23 again appears, and the item with the select check mark is added as an address. However, if a cancel button 327 is depressed, the search sub-screen 471 (411) is closed and the SEND main screen 351 in Fig. 23 again appears, but the address list is not changed.

[Detailed address sub-screen]

When the New button 359 is depressed on the SEND

The detailed address screen (New) 481 can be used to enter a new address.

15           When a detailed address input box 487  
(corresponding to facsimile) is selected, the number-  
key pad 501 is displayed. But when one of the other  
detailed address input boxes 486, 488 and 489 is  
depressed, the full keyboard 381 is displayed.

When the address class "Person" is selected on the  
25 SEND main screen 351 in Fig. 23 and the edit button 360  
is depressed, the detailed address (Person) class  
screen 511 in Fig. 36 is displayed.



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[HD Setting sub-screen]

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This hard disk setting screen 541 can be used to designate the setup to be used for transmitting data to

the hard disk.

[Print Out sub-screen]

When the print out check button 364 is depressed on the SEND main screen 351 in Fig. 23, the print set screen 551 in Fig. 40 is displayed.

The number of copies, the paper size, the scale ratio, double-sided printing, the sorting and the resolution can be designated using the print setting screen 551.

When, for example, a paper size select button 556 is depressed, as is shown in Fig. 41 a paper size list 571 is displayed. A desired paper size is selected from the list 571 and is displayed in a paper size display box 555, as is shown in Fig. 40. When a sorter select button 561 is depressed, the sorter list 581 in Fig. 42 is displayed. A desired sorter is selected from the list 581 and is displayed in a sorter display box 560, as is shown in Fig. 40.

[Scan Setting sub-screen]

When the scanner check button 365 is depressed on the SEND main screen 351 in Fig. 23, the scan setting screen in Fig. 43 is displayed.

On the scan setting screen 591, a desired mode is selected from those displayed in a preset mode select box (Preset Mode) 592 ("Photo" mode in Fig. 43), and the resolution, the scan mode and the density that are set in advance and that correspond to the selected mode

Upon the depression, for example, of a resolution select button 599, the resolution list 611 in Fig. 44 is displayed. When a desired resolution has been selected from the list 611, the resolution is set and is displayed in the resolution display box 598, as is shown in Fig. 43.

15           Upon the depression of a paper size button 597,  
the paper size list 611 in Fig. 46 is displayed as a  
pull-down menu. A paper size and a paper direction are  
selected from the list 631, and are displayed in the  
paper size display box 596, as is shown in Fig. 43.

Fig. 47 is a diagram showing the RETRIEVE main screen 641 that is displayed upon the depression of the main tab "RETRIEVE" 304.

The RETRIEVE main screen 641 includes WWW, E-Mail, FAX and ETP sub-tab buttons 642 to 645, and an HD check button 646 and a print out check button 647, which are used in common for each sub-category.

At the time of initialization, including resetting, the WWW sub-screen is displayed.

When the WWW sub-tab 642 is depressed on the RETRIEVE main screen 641 in Fig. 47, a WWW sub-screen 661 in Fig. 47 is displayed.

When the URL and the values have been entered in the URL input box 648 and the "Link Depth" and "Max Pages" input boxes 649 and 651, and a start button 662 is depressed, in accordance with the setup a home page is printed.

It should be noted that when nothing is displayed in the URL input box 648 and the "Link Depth" and "Max Pages" input boxes 649 and 651, i.e., when nothing has been designated, no function is initiated upon the depression of the start button 662.

When a bookmark button (Bookmark) 656 is depressed

on the WWW sub-screen 661 in Fig. 47, the bookmark sub-screen 671 in Fig. 48 is displayed.

A book mark list is displayed in a bookmark display box 672 on the bookmark sub-screen 671. When the row occupied by a desired bookmark in the list is depressed, the bookmark is selected. Upon the depression of an OK button 677, the bookmark sub-screen 671 is closed, and the selected bookmark is displayed in the URL input box 648 on the WWW sub-screen 661 in Fig. 47.

[E-Mail sub-screen]

When the E-Mail sub-tab 643 is depressed on the RETRIEVE main screen 641 in Fig. 47, the E-Mail sub-screen 681 in Fig. 49 is displayed.

When a server input box (Server) 682, a login name input box (Login Name) 683 and a password input box (Password) 684 are selected, the full keyboard 381 in Fig. 25 is displayed for the entry of a server, a login name and a password so that E-mail can be received from the server.

[FAX sub-screen]

When the FAX sub-tab 644 is depressed on the RETRIEVE main screen 641 in Fig. 47, the FAX sub-screen 691 in Fig. 50 is displayed.

Upon the selection of a facsimile number input box 692 on the FAX sub-screen 691, the number-key pad 501 in Fig. 35 is displayed for the entry of the facsimile

number.

[FTP sub-screen]

Upon depression of the FTP sub-tab 6456 on the  
RETRIEVE main screen 641 in Fig. 47, the FTP sub-screen  
5 701 in Fig. 51 is displayed.

When a server input box (Server) 702, a login name  
input box (Login Name) 703 and a password input box  
(Password) 704 are selected on the FTP sub-screen 701,  
the full keyboard 381 in Fig. 25 is displayed for the  
10 entry of a server, a login name and a password so that  
data can be received from the server.

[HD Setting sub-screen]

Upon the depression of the HD check button 646  
that is used in common for the WWW, E-Mail, FAX and FTP  
15 categories, the hard disk setting screen 541 in Fig. 39  
is displayed.

As is described above, this hard disk setting  
screen 541 can be used to designate the setup to be  
used for transmitting data to the hard disk.

20 [Print Setting sub-screen]

Upon the depression of the print out check button  
647 that is used in common for the WWW, E-Mail, FAX and  
FTP categories, the print setting screen 711 in Fig. 52  
is displayed.

25 The print setting screen 711 has the same  
functions as has the print setting screen 551 in Fig.  
40, and with it a setup can be designated for the

[TASKS screen]

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5      tab "TASKS" 305.
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When a start button 732 is depressed while the TASKS main screen 721 is displayed, an operation for automatically processing externally received document data and for periodically printing (retrieving) the data is performed in accordance with the parameters that are designated on the screen 721.

15 [WWW sub-screen]

At the time of initialization, including resetting, the WWW sub-screen 741 is displayed.

25      that is actually to be executed.

Thus, a task to which the select check mark has been added is executed. A task for which no select

check mark has been provided is stored in the apparatus  
100 and is not executed.

Upon the depression of a new button (New) 729, the WWW detailed setting screen 751 in Fig. 54 is

5 displayed, which will be described in detail later. A  
new task can be entered on the WWW detailed setting  
screen 751.

When one task in the WWW task list 727 is selected and an edit button (Edit) 730 is depressed, the WWW detailed setting screen 751 in Fig. 54, in which information for the selected task is included, is displayed. The settings on the WWW detailed setting screen 751 of the information for the selected task can be edited.

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15      When a task in the WWW task list 727 is selected
      and a delete button (Delete) 731 is depressed, that
      task is deleted.
      [WWW detailed setting screen]

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The WWW detailed setting screen 751 includes, as is shown in Fig. 54, the RETRIEVE main screen 641 in Fig. 47 and components 752 to 764, a check time display box 765, a check time setting button 766, a print change check button (Print When Changed) 767, a transmission check button 768, an OK button 770 and a cancel button 769, all of which are employed in common with the WWW sub-screen 661.

The check time display box 765 is blank when the



WWW detailed setting screen 751 is displayed following the depression of the new button 729. When the screen 751 is displayed following the depression of the edit button 730, a designated task execution time is  
5 displayed. Further, immediately after the setting is performed on the check time sub-screen, which will be described later, the designated task execution time is displayed.

Upon the depression of the check time setting  
10 button 766, the check time sub-screen that will be described later is displayed. On this screen, the time for executing a task can be set.  
[Check time sub-screen]

When the check time setting button 766 is  
15 depressed on the WWW detailed setting screen 751 in Fig. 54, the check time sub-screen 771 in Fig. 55 is displayed.

The check time sub-screen 771 includes schedule mode setting buttons 772 to 774, a time input box 775,  
20 an OK button 779 and a cancel button 778.

In Fig. 55 is shown the screen display when the "Once" button 772, of the three schedule mode setting buttons 772 to 774, is selected and depressed. In this case, a "month" input box 776 and a "date" input box  
25 777 are displayed. Upon the selection of these input boxes 776 and 777, the number-key pad 501 in Fig. 35 is displayed for the entry of the date on which the task

is to be executed.

Upon the depression of the "Weekly" button 773, day setting buttons 781 are displayed, as is shown in Fig. 56. With the day setting buttons 781, the day of the week a task is to be executed can be entered. It should be noted that in a week a plurality of days can be designated.

Upon the depression of the "Monthly" button 774, a "month" input box 791 is displayed, as is shown in Fig. 57. When the input box 791 is selected, the number-key pad 501 in Fig. 35 is displayed for the entry of the month a task is to be executed.

[MGMT screen]

Fig. 58 is a diagram showing the management main screen 801 that is displayed upon the depression of the main tab "MGMT" 306.

[CONFIG screen]

Fig. 59 is a diagram showing the configuration main screen 811 that is displayed upon the depression of the main tab "CONFIG" 307.

[Full keyboard]

As is described above, the full keyboard 381 in Fig. 25 is displayed when a character input box on a screen is selected.

Characters can be entered by depressing the keys on the keyboard 381. The full keyboard 381 is especially arranged so that the characters "www" can be

entered by depressing the "www" key, and so that the characters "com" can be entered by depressing the "com" key.

[Number-key pad]

- 5           As is described above, the number-key pad 501 in Fig. 35 is displayed when a numerical value input box or the month and date input boxes on a screen are selected.

[Error screen]

- 10           When an error occurs during the manipulation of devices on the above screens, the error screen 821 in Fig. 60 is displayed.

- The error screen 8721 includes a message display box 822 in which an error message is displayed using  
15           text, and an OK button 823 for closing the error screen 821.

- This completes the explanation given for the screen structures of the LCD display device 171 of the operation unit 132 of the image processing apparatus  
20           100, the manipulation of devices on the screens, and associated processes.

- An explanation will now be given for a device information service (hereinafter referred to as "DIS") employed by the image processing apparatus 100, and  
25           associated scan processing and printing processing.

[DIS]

          In the image processing apparatus 100, the control

unit 110 defines, as "DIS", the database (see Figs. 1 and 12) and an interface (I/F) for the database. In the database, a setup value for a job (the scanning or the printing operation), the function and the status of a device (the scanner 133, the printer 134, etc.) and accounting information are stored as a data form that conforms to the control API 268.

Fig. 61 is a diagram showing the exchange of data by a job manager 269 and a DIS 831, by the job manager 269 and a scanner manager 274 or a printer manager 276, and by the DIS 831 and the scanner manager 274 or the printer manager 276.

Essentially, dynamic information, such as an instruction for starting the scanning operation or the printing operation (job) is directly transmitted by the job manager 268 to the scanner manager 274 or the printer manager 276 (document manager). Static information, such as the function of the scanner 133 or the printer 134 and the contents of the scanning or the printing operation (job), is obtained from the DIS 831.

The static information or the dynamic information output by the scanner manager 274 or the printer manager 276, and event information are transmitted via the DIS 831 to the job manager 269.

When the scanner manager 274 or the printer manager 276 sets data in, or obtains data from the database of the DIS 831, since the data form in the DIS

831 conforms to the control API 268, mutual conversion is performed between the data form conforming to the control API 268 and the data form that the scanner manager 274 and the printer manager 276 can understand.

5           For example, to store status data in the database  
of the DIS 831, the scanner manager 274 and the printer  
manager 276 interpret the device inherent data, convert  
them into the data form defined by the control API 268,  
and write the resultant data in the database of the DIS  
10 831.

It should be noted that when the job manager 369 stores data in or obtains data from the database of the DIS 831 no data are exchanged by the two.

The DIS 831 updates event data in accordance with  
15 various event information received from the scanner  
manager 274 and the printer manager 276.

Fig. 62 is a diagram showing various databases stored in the DIS 831.

In Fig. 62, first, a supervisor DB 842 is used to store the status and user information for the apparatus 100. Among the information stored in the supervisor DB 842, information, such as a user ID and a password, that requires a backup is stored in nonvolatile memory, such as an HDD or a backup memory.

25           A scan component DB 843 and a print component DB  
844 are provided for corresponding components that are  
present (in this case, the scanner 133 and the printer

134).

For an apparatus including only a printer, for example, only the print component DB 844 is provided, while for an apparatus including only a facsimile machine, only a FAX component DB is provided.

At the time of initialization, the scanner manager 274 and the printer manager 276 store the functions and statuses of the scanner 133 and the printer 134 in the scan component DB 843 and the print component DB 844, respectively.

Similarly, upon initialization, the scanner manager 274 and the printer manager 276 store the functions available with the scanner 133 and the printer 134, and the support statuses in a scan job service DB 845 and a print job service DB 846, as well as in the scan component DB 843 and the print component DB 844.

Each time a scanner job, a print job, and associated document information is generated, a scan job DB 847, a print job DB 846, a scan document DB 849 and a print document DB 850 are dynamically obtained and initialized by the scanner manager 274 and the printer manager 276, and the setting up of necessary items is performed.

Before the scanning process or the printing process is started, the scanner manager 274 or the printer manager 276 reads necessary data from the

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table 852, as needed. When the release of event information is designated by the scanner manager 274, the DIS 831 deletes, from the event table 852, the event ID and detailed data for the event information that has been designated.

When event polling is performed by the scanner manager 274, the DIS 831 refers to the event table 852 and returns, to the scanner manager 274, the event ID and the detailed data for an current event. When there is no currently occurring event, a message to that effect is transmitted to the scanner manager 274.

When event information indicating the scanning end is received from the scanner manager 274, the DIS 831 updates a count value held by the soft counter 851 for the scanning operation. The counting process is performed by using software, and the count value is updated in nonvolatile memory, such as a backup memory or an HDD, in order to prevent the loss of the count value in the event of a sudden, unexpected shutdown.

Since the same process as is performed for the scanner manager 274 is performed upon the receipt of the event information and the release of the event information from the printer manager 276, no detailed explanation for this process will be given.

[Scanning processing]

Fig. 63 is a diagram showing the arrangement of a section in the image processing apparatus 100 in Fig. 1



that is related to the scanning processing.

As is shown in Fig. 63, during the scanning processing data are exchanged via the image bus 120 by the RAM 112, the CPU 111, the scanner 133, the image  
5 compression processor 126 and the HDD 114.

To simplify the explanation, the image bus I/F 115 (see Fig. 1), which is provided between the image bus 120 and the system bus 119 that connects the CPU 111, the RAM 112 and the HDD 114, is not shown in Fig. 63.

10 In Fig. 63, the scanner 133 is a scanner function unit, for the image processing apparatus 100, having a composite function that includes the scanner function and the printer function. However, the apparatus may include only the scanner function.

15 A PCI bus is employed as the image bus 120, and the HDD 114 conforms to the IDE (Integrated Device Electronics) standards.

A SCSI I/F is employed as the device I/F 122. Thus, the scanner 133 is connected to the device I/F  
20 122 by a SCSI cable 861.

Since the HDD 114 conforms to the IDE standards, it is connected via an IDE controller 862 to the image bus 120. The HDD 114 and the IDE controller 862 are connected together by an IDE cable 864.

25 With the above arrangement, the scanning processing is initiated when the CPU 111 executes a program having the software structure shown in Fig. 64.

In Fig. 64, the job manager 269 employs the functions explained while referring to Figs. 12 and 61 to sort and store a request received from an application. The DIS 831 also employs the function explained while referring to Fig. 61 to store parameters required for the scanning process at an application level. The job manager 269 and the DIS 831 store a request received from the application, and the parameters in the RAM 112.

A scan operation management unit 871 obtains information required for a scan operation from the job manager 169 and the DIS 831.

Specifically, the scan operation management unit 871 receives, from the job manager 269, table data 881 that includes a job number 882 and a document number 883, as is shown in Fig. 65A. Then, based on the job number 882 and the document number 883, the scan operation management unit 871 receives scan parameter data 884 from the DIS 831. As is shown in Fig. 65B, the scan parameter data 884 includes a job number 885, and a document number 886 and its associated scan parameters, such as an image file type 887, a scan image attribute 888 and a scan image compression format 889. As a result, the scanning process is performed based on the scanning condition requested by the application.

The scan operation management unit 871 transmits



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Upon receipt of the request from the scan sequence

control unit 872, the compression/decompression control unit 873 employs the image compression processor 126 (CODEC) connected to the image bus 120 (PCI bus) to compress the image data in the RAM 112 in accordance with the contents of the scan image compression format 889.

The compression/decompression control unit 873 stores again the obtained image data in the RAM 112.

When the compression by the compression/decompression control unit 873 and storing of compressed image data in the RAM 112 are completed, the scan sequence control unit 872 issues a request to a file system 874 to file the compressed image data in the RAM 112 in accordance with the image file type 887 included in the scan parameter data 884.

Upon receiving the request from the scan sequence control unit 872, the file system 874 transmits the image data in the RAM 112, via the IDE controller 862, to the HDD (IDE HDD) 114 that is connected to the image bus 120. Thus, the image data are filed in accordance with the image file type 887.

When the filing by the file system 874 (transmission of image data to the HDD 114) is completed, the scan sequence control unit 872 ascertains that the scanner 133 has scanned one sheet of the document.

At this time, if there is still a document sheet

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To simplify the explanation, the image bus I/F 115 (see Fig. 1), which is provided between the image bus 120 and the system bus 119 that connects the CPU 111 and the RAM 112, is not shown in Fig. 66.

In Fig. 66, the printer 134 is a printer function

unit for the image processing apparatus 100 that has a composite function, which includes the scanner function and the printer function. However, the apparatus may include only the printer function.

5           A PCI bus is employed as the image bus 120.

          An engine I/F is employed as the device I/F 122. Thus, the printer 134 is connected to the device I/F 122 by an engine I/F cable 891.

          The engine I/F includes a DPRAM on the board.  
10          Thus, the device I/F 122 that employs the engine I/F employs the DPRAM to set the parameters for the printer 134, to read the state of the printer 134, and to exchange control commands with the printer 134.

          The engine I/F also includes a video controller on  
15          the board. Thus, the device I/F that employs the engine I/F transmits document data (image data) developed on the image bus 120 (PCI bus) via the engine I/F cable 891 to the printer 134, in synchronization with a VCLK (Video Clock) and an HSYNC that are  
20          transmitted by the printer 134 via the engine I/F cable 891.

          An explanation will now be given for the setting of the parameters at the printer 134 via the DPRAM in the device I/F 122 (the engine I/F).

25          First, as is described above (see Fig. 61), when the CPU 111 issues a printing instruction to the control API 268, the control API 268 transmits it as a

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job to the job manager 269 at a controller level. The job manager 269 stores the received job to the DIS 831, and instructs the printer manager 276 to start the job.

Upon receiving the job from the job manager 269,  
5 the printer manager 276 reads, from the DIS 831, the information required for the execution of the job. At this time, the printer manager 276 sets the obtained information in the printer 134 via the device I/F (engine I/F) 122 and the internal DPRAM.

10 Fig. 67 is a diagram showing the items set for the device I/F 122 (engine I/F), and Fig. 68 is a diagram showing the items that are set in the internal DPRAM, a control command and a status command.

Specifically, assume that a current job is the  
15 printing of one copy of two pages of non-compressed binary images on letter size (11" x 8.5") sheets, and that the printer 134 has a resolution of 600 dpi. First, when the job is received, the printer manager 276 obtains the number of bytes WIDTH (hereinafter  
20 referred to as an image width) for the width of an image (the width on the 8.5" side) by calculating:

$$\text{WIDTH} = 8.5 \times 600 / 8 \approx 630 \text{ (bytes)}.$$

Then, the printer manager 276 obtains the number of lines LINES by calculating

25  $\text{LINES} = 11 \times 600 = 6600 \text{ (lines)}.$

The printer manager 276 sets, in the device I/F 122 (the engine I/F), the image width WIDTH, the line

count LINES, and an address SOURCE on the image bus (PCI bus) 120 at which is stored image data for the first page, as is shown in Fig. 67.

At this time, although the device I/F 122 (the engine I/F) is prepared to output image data, it does not output image data because the VCLK and the HSYNC are not output by the printer 134.

As is shown in Fig. 68, the printer manager 276 sets a "1" in the address BookNo of the DPRAM in the device I/F 122 (the engine I/F). The BookNo reflects the number of output copies.

Similarly, the printer manager 276 sets a "1" at the address FEED-REQ in the DPRAM. The FEED-REQ indicates a request has been submitted to supply paper for the first page.

The printer manager 276 examines the address IMAGE\_START in the DPRAM while waiting for a request for image data from the printer 134. A request command from the printer 134 for image data is set in the IMAGE\_START.

When an image data request is received from the printer 134 via the DPRAM, the printer manager 276 sets to on a command for the start of the output of image data at the address IMAGE\_START in the DPRAM, and sends a notification to that effect to the printer 134.

Upon receiving the notification, the printer 134 begins to output the HSYNC to the device I/F 122 (the



engine I/F).

The device I/F 122, which has been waiting for the HSYNC, reads image data for the first page from the image bus 120 (PCI bus) in accordance with the address  
5 SOURCE set by the printer manager 276, and outputs the data to the printer 134.

The printer 134 prints the received image data on a prepared paper sheet. When the printer 134 detects the rear edge of the paper sheet, it sets to on a  
10 command indicating the end of the printing for the first page at the address IMAGE\_END in the DPRAM, and sends a notification to that effect to the printer manager 276.

The printer 134 discharges the printed sheet for  
15 the first page, and sets to on a paper discharge command at the address SHEET\_OUT in the DPRAM.

Upon receiving from the printer 134 the print end notification for the first page via the DPRAM, the printer manager 276 calculates the image width WIDTH  
20 and the line count LINES for the second page. Then, the printer manager 276 sets, in the device I/F 122 (the engine I/F), the image WIDTH, the line count LINES and the address SOURCE on the image bus 120 (PCI bus) at which the image data for the second page are stored.

25 Thereafter, the image data for the second page are printed in the same manner as were the data for the first page.



The user authentication process that is the most important feature of the image processing apparatus 100 will now be described.

In order to simplify the explanation, the image processing apparatus 100 is defined as a local device on the transmission side, and apparatuses connected to the image processing apparatus 100 via a network, e.g., the printer 238 in Fig. 11 and the image processing apparatus 100', which has the printer function, are defined as remote devices on the reception side. An explanation will be given for an example where image data scanned by the local device are printed by the remote device.

Fig. 70 is a diagram showing the essential portions of the local device and the remote device.

The same reference numerals as are in Fig. 1 are also used in Fig. 70 to denote corresponding components, and no detailed explanation for them will be given.

First, as is shown in Fig. 70, a user registration table 902 is provided for both the local device and the remote device.

As is shown in Fig. 71, the user registration table 902 includes an ID number field 921 for storing user ID numbers (user IDs); a password field 922 for storing passwords; a user name field 923 for storing user names using character string data; and an

additional information field 924 for using character string data to store information concerning users.

A user ID is a combination of identification data for the division of an organization to which a user belongs and personal identification data. With the user ID, data totalization can be performed for each person or for each division.

The password is encrypted using a predetermined cryptography process to prevent the password from being easily obtained from the user registration table 901. Therefore, during the user authentication processing, password data are decrypted or an input password is encrypted, as needed, in order to determine whether the two passwords match.

Only data for a user who is permitted to use a device are registered in the user registration table 902 by the manager of the pertinent device.

When, for example, a user desires to employ the local device or the remote device, the user submits his or her name and password to the manager of the pertinent device, and requests that the data be registered in a vacant data entry location in the user registration table 902. The manager registers the user data in a vacant data entry location in the table 902. If there is no vacancy in the user registration table 902, user data that is not required are deleted from the currently registered data in the user registration

table 902, or the number of entries in the table 902 is increased, so as to register the user data.

A counter table 905 is provided for the local device. For each user registered in the user registration table 902, the counter table 905 includes a scanning counter for counting the number of scanning processes performed by the scanner 133, a printing counter for counting the number of printing processes performed by the remote device, and user device use information.

Fig. 72 is a flowchart showing the user authentication processing employed when the local device performs a log-on operation. The user authentication processing will now be described while referring to Figs. 70 to 72.

First, the user of the local device confirms that the ID input screen 311 in Fig. 15 is displayed on the LCD display device 171 (see Fig. 3) of the operation unit 132, and that the log-on operation is enabled. Then, on the ID input screen 311, the user enters his or her ID and password (steps S931 and S932).

Subsequently, the CPU 111 determines that the user ID and password have been input by the user at steps S931 and S932.

The CPU 111 then employs an authentication unit 901 to obtain the input user ID from the ID number field 921 in the user registration table 902, and

specifies the entry of the user (step S933).

Following this, the CPU 111 determines whether an ID that matches the user ID that was input is present in the ID number field 921 (step S934).

- 5           If a match for the user ID is not obtained, the CPU 111 ascertains that the user does not have permission to use the pertinent device, and displays the error screen 821 in Fig. 60 on the LCD display device 171 of the operation unit 132 to notify the user
- 10       no match was found (step S938).

Thereafter, the CPU 111 terminates the processing, and again enables the log-on operation by displaying the ID input screen 311 on the LCD display device 171 of the operation unit 132.

- 15           If at step 934 a match for the user ID is found, the CPU 111 employs the authentication unit 901 to compare the password that was input with a password in the password field 922 in the user entry that is specified at step S933 (step S935).

- 20       The CPU 111 then determines whether the passwords match (step S936).

- If the passwords do not match, the CPU 111 ascertains that the user has not obtained to use the pertinent device, and to notify the user that no match was found, displays the error screen 821 in Fig. 60 on the LCD display device 171 of the operation unit 132 (step S939).
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Thereafter, the CPU 111 terminates the processing, and again enables the log-on operation by displaying the ID input screen 311 on the LCD display device 171 of the operation unit 132.

5           If at step S936 a password match is found, the CPU  
111 shifts the ID input screen 311 on the LCD display  
device 171 of the operation unit 132 to the operation  
screen 301 with which the device can accept normal  
entry from the user.

10           Therefore, the user can employ this device, and  
the log-on operation, including user authentication, is  
terminated.

Thereafter, on the operation unit 132, the user performs the following operation.

15           First, the ID input screen 311 is changed to the  
operation screen 301 on the LCD display device 171 of  
the operation unit 132.

The user depresses the main tab "SEND" 303 at the top of the operation screen 301 to transmit image data via the network to the remote device. Then, the SEND main screen 351 in Fig. 23 appears on the LCD display device 171 of the operation unit 132.

On the SEND main screen 351, the user designates an address for an object device (a remote device), inputs a message for the destination, and designates a transmission method.

If the address of the object device (the remote

device) is not included in the address display portion 352 of the SEND main screen 351, the user depresses the address book button 358. Then, the address book screen 391 in Fig. 26 appears on the LCD display device 171 of the operation unit 132.

The user searches for or adds a destination to the address book screen 391. At this time, the destination can be deleted on the address book screen 391, or the detailed information screen 401 in Fig. 27 can be displayed.

The user depresses the scanner check button 365 on the SEND main screen 351 to set the condition for the scanning operation. Then, the scan setting screen 591 in Fig. 43 appears on the LCD display device 171 of the operation unit 132.

Icons corresponding to various images, such as a photographic image (Photo), a character (Text), a photograph and character mixture (Photo Text), a newspaper (Draft) and a default value (Not Defined), are displayed in the preset mode select display box 592 on the scan setting screen 591.

The user selects one optimal icon for a document to be scanned. As a result, the resolution and the optimal scan mode for the document (a binary reading mode or a multi-valued reading mode) are automatically designated.

To change the resolution and the scan mode that



are automatically set, the user depresses the resolution select button 599 on the scan setting screen 591. Then, the resolution list 611 in Fig. 44 is displayed on the LCD display device 171 of the operation unit 132. Thereafter, the user selects a  
5 desired resolution from the list 611.

Furthermore, when the user depresses the mode select button 601 on the scan setting screen 591, the scan mode list 621 in Fig. 45 is displayed on the LCD  
10 display device 171 of the operation unit 132. Thereafter, the user selects a desired mode from the list 621.

As is described above, the user can designate the resolution and the scan mode separately.

15 Furthermore, to set the paper size for a document to be scanned, the user depresses the paper size select button 597 on the scan setting screen 591. Since the paper size list 631 in Fig. 46 is displayed on the LCD 171 of the operation unit 132, the user can select an  
20 appropriate paper size for the document.

In addition, to adjust the density, the user manipulates two buttons adjacent to the display box 602 on the scan setting screen 591, and sets a desired density.

25 Fig. 73 is a flowchart showing the processing performed after the user has set the information for a transmission destination device (a remote device) and



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the SEND main screen 351 (step S942).

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The print request includes user information  
(information for a user who is employing the local

device), such as a user ID and a password required for the user authentication at the remote device.

The user information included in the print request can also be read from the user registration table 902

5 and can be automatically added to the print request.

When more correct user authentication is to be performed by the remote device, the input of the user information at the operation unit 132 can be requested of the user of the local device, and the thus input user information can be added to the print request.

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Upon receipt of the print request, the remote device performs the user authentication process by using the user information in the print request and in the user registration table 902 of the remote device.

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Specifically, since an authentication unit 908 in the remote device has the same function as the authentication unit 901 of the local device, the authentication unit 908 determines in the same manner as in Fig. 72 whether a user ID and a password that match those in the print request are present in the user registration table 902 (step S946).

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If it is ascertained that the user who issued the print request at the local device can obtain permission to use the remote device, the remote device permits a communication process unit 907 to notify the local device that the print request is accepted.

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If the user who issued the print request at the

5           Only when the notification that the print request  
has been accepted is received does the local device  
perform the following process.

The remote device employs the communication process unit 907 to receive the image data from the local device, and temporarily stores them in a RAM 913.

15 The remote device then employs a printer operation control unit 910 to print the image data in the RAM 913 using a printer 911. At this time, each time data for one page is printed by the printer 911, the remote device notifies the local device of the print end for

20 one page. This notification includes, as additional information, the paper size used by the printer 911.

The CPU 111 of the local device employs the communication process unit 903 to receive, from the remote device, the notification of the print end for one page (step S949). A scan operation control unit 25 904 searches the counter table 905 and obtains the print counter that corresponds to the user ID of the

user who is employing the local device, and updates the value of the print counter (step S950).

The print counter is provided for each of the various paper sizes, and the value of the print counter  
5 that corresponds to the paper size used by the remote device is updated.

The CPU 111 permits the communication process unit 903 to determine whether the print end notification for all the pages has been received from the remote device  
10 (step S951).

If the print end notification for all the pages has been received, the printing processing is terminated. If not, program control returns to step S949 and the above described processing is repeated.

Fig. 74 is a flowchart showing the processing performed after the user has set the information for an transmission destination device (remote device) and the information for the document to be scanned. In this example, the document that is scanned is stored in the  
15 storage area of the remote device.  
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First, the user places a document on the document table or in the automatic document feeder of the scanner 133 (step S961).

The user then depresses the start button 366 on  
25 the SEND main screen 351 (step S962).

When the CPU 111 detects the manipulations at steps S961 and S962, the CPU 111 permits the scan

operation control 904 to instruct the scanner 133 to begin to scan the document (step S963).

Thus, the scanner 133 starts scanning and stores the obtained image data in the RAM 112 each time the scanning of one page of the document is completed (step S964).

At the same time, the CPU 111 permits the scan operation control unit 904 to search the counter table 905 and to obtain the scan counter that corresponds to the user ID of the user who is employing the local device, and to update the value of the scan counter and the device use information related to the scan counter.

The CPU 111 permits the communication process unit 903 to issue a storage request to the remote device (step S965).

The storage request includes user information (information for a user who is employing the local device), such as a user ID and a password required for the user authentication at the remote device. In addition, parameters can be designated for the transmission of data to the hard disk of the remote device that is selected on the hard disk setting screen 541.

The user information included in the storage request can also be read from the user registration table 902 and can be automatically added to the storage request. When more correct user authentication is to

be performed by the remote device, the input of the user information at the operation unit 132 can be requested of the user of the local device, and the thus input user information can be added to the storage request.

Upon receipt of the storage request, the remote device performs the user authentication process by using the user information in the storage request and the user registration table 902 of the remote device.

Specifically, since the authentication unit 908 in the remote device has the same function as the authentication unit 901 of the local device, the authentication unit 908 determines in the same manner as in Fig. 72 whether a user ID and a password that match those in the storage request are present in the user registration table 902 (step S966).

If it is ascertained that the user who issued the storage request from the local device has obtained permission to use the remote device, the remote device permits the communication process unit 907 to notify the local device that the storage request has been accepted.

If the user who issued the storage request from the local device is not permitted to use the remote device, the remote device permits the communication process unit 907 to notify the local device that the storage request has not been accepted (step S969).

Only when the notification that the storage request is accepted is received, the local device performs the following process.

5       The CPU 111 of the local device employs the communication process unit 903 to transmit, to the remote device, image data stored in the RAM 112 (step S967).

10       The remote device employs the communication process unit 907 to receive the image data from the local device, and stores them in a designated area of the hard disk.

15       The CPU 111 permits the communication process unit 903 to determine whether the end notification of storage of image data is received from the remote device (step S968).

      If the storage end notification is received, the printing processing is terminated. If not, program control returns to step S968 and the above described processing is repeated.

20       Fig. 75 is a flowchart showing the processing performed after the user has set the information for a transmission destination device (remote device) and information for the document to be scanned. In this example, the facsimile transmission function of the remote device is employed to transmit the obtained document data via the PSTN or the ISDN to an object facsimile machine.



First, the user places a document on the document table or the automatic document feeder of the scanner 133 (step S971).

The user then depresses the start 366 on the SEND  
5 main screen 351 (step S972).

When the CPU 111 detects the manipulations at steps S971 and S972, the CPU 111 permits the scan operation control 904 to instruct the scanner 133 to begin to scan the document (step S973).

10 Thus, the scanner 133 starts scanning, and stores obtained image data in the RAM 112 each time one page of the document is scanned (step S974).

At the same time, the CPU 111 permits the scan operation control unit 904 to search the counter table  
15 905 and obtain the scan counter that corresponds to the user ID of the user who is employing the local device, and to update the value of the scan counter and the device use information concerning the scan counter.

The CPU 111 permits the communication process unit  
20 903 to issue a facsimile transmission request to the remote device (step S975).

The facsimile transmission request includes user information (information for a user who is employing the local device), such as a user ID and a password  
25 required for the user authentication at the remote device.

The user information included in the facsimile

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If the user who issued the facsimile transmission

request from the local device is not permitted to use the remote device, the remote device permits the communication process unit 907 to notify the local device that the facsimile transmission request is not  
5 accepted (step S979).

Only when the notification that the facsimile transmission request is accepted is received, the local device performs the following process.

The CPU 111 of the local device employs the  
10 communication process unit 903 to transmit, to the remote device, image data stored in the RAM 112 (step S977).

The remote device employs the communication process unit 907 to receive the image data from the  
15 local device, and transmits them by facsimile to a device designated by the local device.

The CPU 111 permits the communication process unit 903 to determine whether the end notification of transmission of image data is received from the remote  
20 device (step S978).

If the transmission end notification is received, the printing processing is terminated. If not, program control returns to step S978 and the above described processing is repeated.

25 In the examples in Figs. 73, 74 and 75, first the document is scanned by the scanner 133 and then the authentication process is performed by the remote



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The objective of the present invention can also be implemented in the following manner: a storage medium in which software program code to implement functions of the host and the terminal in the above embodiment is loaded to a computer (a CPU or an MPU) in an apparatus or in a system, and the program code is read by the computer in the system or the apparatus.

In this case, the software program code accomplishes the functions of the above described embodiment. And the program code and means for supplying the program code to the computer, e.g., a storage medium on which such program code is recorded, constitute the present invention.

A storage medium for supplying such program code can be, for example, a ROM, a floppy disk, a hard disk, an optical disk, a magneto-optical disk, a CD-ROM, a CD-R, a magnetic tape, or a nonvolatile memory card.

In addition, the present invention also includes not only a case where the functions in the previous embodiment can be performed when program code is read and executed by the computer, but also a case where, according to an instruction in the program code, an OS (Operating System) running on the computer, or another application software program, interacts with the program code to accomplish the functions in the above embodiment.

Furthermore, the present invention includes a case

where program code, read from a storage medium, is written in a memory that is mounted on a function expansion board inserted into a computer, or in a function expansion unit connected to a computer, and in  
5 consonance with a program code instruction, a CPU mounted on the function expansion board or the function expansion unit performs one part, or all of the actual processing in order to implement the functions in the above described embodiment.

10 As is described above, according to this embodiment, the user authentication process is performed by using user information (user ID) input by a user and registered information. Only when it is ascertained that the user is authorized, the user  
15 information (the user ID and the password) is transmitted to a remote device (a device connected across the network), together with an operation request that is issued to the remote device by the user.

Therefore, the remote device can employ the  
20 received user information and predetermined information that is registered in advance for users who can employ the remote device, and can determine whether the user who issued the request to the remote device is an authorized user (user authentication process). Only  
25 when the user is authorized, the remote device accepts the operation request and performs the associated operation.

Furthermore, in the embodiment, the local device performs the user authentication process by using the user information (the user ID and the password), which is received together with an operation request from the remote device, and registered information.

As a result, only when the user who issued the operation request is an authorized user, the local device can accept the operation request and perform the associated operation.

Specifically, assume that image data are obtained by the local device (the first device) having the scanner function, and are printed by the remote device (the second device) that has the printing function and that is connected via the network. First, when the user inputs the user ID and the password to the local device, the local device performs the user authentication by using the user ID, the password and information that is prepared in advance. When it is ascertained that the user is a authorized user, the local device begins the scanning process in accordance with an instruction entered by the user. At the same time, the local device transmits, across the network to the remote device, the input user ID and password together with the operation request that is issued to the remote device by the user.

The remote device performs the user authentication process by using the user ID and password received from

the local device, and information that is prepared in advance. When the user at the local device who issued the operation request to the remote device is an authorized user, the remote device accepts the  
5 operation request from the local device, and prints data in accordance with the request.

With this arrangement, the remote device does not unconditionally accept the operation request from the local device and perform the requested operation, and  
10 can perform the operation only upon the receipt of a request from an authorized user. Further, as is described above, when the local device ascertains that the user is an authorized user and when the user issues an operation request to the remote device, the local  
15 device (which already has information required for user authentication) requests the authentication by the remote device. As a result, the input of authentication information by the user and an instruction to perform the authentication process are  
20 not required.

In the above described communication between the local device and the remote device, the status of the device (the results of the user authentication process) may be transmitted. In addition, if the local device  
25 requests that the user input detailed user information other than the user ID and the password, a more accurate user authentication process can be performed.



Therefore, according to the present invention, various devices on the network can be efficiently and accurately managed.

WHAT IS CLAIMED IS:

5 registration means for registering in advance  
predetermined information for a user who is authorized  
to use said apparatus;

first authentication means for employing said  
predetermined information registered by said  
registration means and said user information entered by  
said user at said input means to determine whether said  
15 user is an authorized user;

second authentication means for obtaining from  
said different apparatus the results of an  
authentication process, performed for said user  
information received from said transmission means, to  
25 determine whether said user is authorized to use said  
different apparatus; and

obtained by said second authentication means to determine whether said user is to be permitted to use said service.

5           2. An apparatus according to claim 1, wherein said registration information and said user information each includes at the least a user ID and a password.

10           3. An apparatus according to claim 1, further comprising:

scanner means for reading a document,

wherein said operating instruction is an instruction for printing image data read by said scanner means using a printer function of said  
15 different apparatus.

4. An apparatus according to claim 1, further comprising:

scanner means for reading a document,

20           wherein said operating instruction is an instruction for storing, in a predetermined area, image data read by said scanner means using a storage function of said different apparatus.

25           5. An apparatus according to claim 1, further comprising:

scanner means for reading a document,

wherein said operating instruction is an instruction for transmitting, to a predetermined destination, image data read by said scanner means by using a facsimile transmission function of said  
5 different apparatus.

6. An apparatus that performs a service in cooperation with a different apparatus accessible across a network, comprising:  
10 registration means for registering, in advance, predetermined information for a user who is permitted to use said apparatus;  
reception means for receiving user information and an operating instruction request for said apparatus,  
15 both of which are entered by a user at said different apparatus on said network;  
authentication means for employing said information registered by said registration means and said user information received by said reception means  
20 to determine whether said user is an authorized user; and  
determination means for employing the results obtained by said authentication means to determine whether said operating instruction request received by  
25 said reception means is to be accepted.

7. An apparatus according to claim 6, wherein

said registration information and said user information each includes at the least a user ID and a password.

8. An apparatus according to claim 6, further  
5 comprising:  
printing means for outputting data to a printer,  
wherein said operating instruction is an  
instruction for employing said printer means to print  
image data read by the scanner function of said  
10 different apparatus.

9. An apparatus according to claim 6, further  
comprising:  
storage means for storing data,  
15 wherein said operating instruction is an  
instruction for employing said storage means to store  
image data read by the scanner function of said  
different apparatus.

20 10. An apparatus according to claim 6, further  
comprising:  
facsimile transmission means for transmitting data  
by facsimile,  
wherein said operating instruction is an  
25 instruction for employing said facsimile transmission  
means to transmit, to a predetermined destination,  
image data read by the scanner function of said

different apparatus.

11. A communication system wherein at least a first device performs a service in association with a second device accessible across a network, said first device comprising:

first registration means for registering in advance predetermined information for a user who is authorized to use said first device;

input means for use by said user to enter said user information and an operating instruction request for said second device;

first authentication means for employing said predetermined information registered by said first registration means and said user information entered by said user at said input means to determine whether said user is an authorized user;

transmission means for, based on the results obtained by said first authentication means, transmitting to said second device said user information and said operating instruction that are entered at said input means, and

said second device comprising:

reception means for receiving user information and

an operating instruction request for said second device, both of which are entered by a user at said first device;

second authentication means for employing said  
5 information registered by said second registration means and said user information received by said reception means to determine whether said user is an authorized user; and

determination means for employing the results  
10 obtained by said second authentication means to determine whether said operating instruction request received by said reception means is to be accepted.

12. A communication system according to claim 11,  
15 wherein said registration information and said user information each includes at the least a user ID and a password.

13. A communication system according to claim 11,  
20 wherein said first device further comprises scanner means for reading a document and said second device further comprises printing means for printing data; and wherein said operating instruction is an instruction for employing said printer means to print image data  
25 read by said scanner means.

14. A communication system according to claim 11,

wherein said first device further comprises scanner means for reading a document and said second device further comprises storage means for storing data; and wherein said operating instruction is an instruction for employing said storage means to store image data read by said scanner means.

15. A communication system according to claim 11, wherein said first device further comprises scanner means for reading a document and said second device further comprises facsimile transmission means for transmitting data by facsimile; and wherein said operating instruction is an instruction for employing said facsimile transmission means to transmit, to a predetermined destination, image data read by said scanner means.

16. A communication method whereby an apparatus performs a service in association with a different apparatus accessible across a network, comprising the steps of:

employing a registration table in which user information entered by a user and predetermined information for a user who is permitted to use said apparatus are registered in advance, to determine whether said user is an authorized user;

based on the obtained results, transmitting to



said different apparatus an operating instruction and  
said user information that are entered by said user;

obtaining from said different apparatus the  
results of an authentication process, performed for  
5 said user information that are transmitted, to  
determine whether said user is authorized to use said  
different apparatus; and

employing the obtained results to determine  
whether said user is to be permitted to use said  
10 service.

17. A communication method according to claim 16,  
wherein said information in said registration table and  
said user information each includes at the least a user  
15 ID and a password.

18. A communication method according to claim 16,  
further comprising the step of:

employing a scanner to read a document,  
20 wherein said operating instruction is an  
instruction for printing image data read by said  
scanner using a printer function of said different  
apparatus.

25 19. A communication method according to claim 16,  
further comprising the step of:

employing a scanner to read a document,

wherein said operating instruction is an instruction for storing, in a predetermined area, image data read by said scanner using a storage function of said different apparatus.

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20. A communication method according to claim 16, further comprising the step of:

employing a scanner to read a document,

wherein said operating instruction is an

10 instruction for transmitting, to a predetermined destination, image data read by said scanner by using a facsimile transmission function of said different apparatus.

15 21. A communication method whereby an apparatus connected to a network performs a user authentication process, comprising the steps of:

receiving, from a different apparatus on said network, user information and an operating instruction  
20 request for said apparatus;

employing a registration table in which said user information and predetermined information for a user who is permitted to use said apparatus are registered in advance, to determine whether said user is an  
25 authorized user; and

employing the obtained results to determine whether said received operating instruction request is

to be accepted.

22. A communication method according to claim 21,  
wherein said registration information and said user  
5 information each includes at the least a user ID and a  
password.

23. A communication method according to claim 21,  
further comprising the step of:  
10 outputting data to a printer,  
wherein said operating instruction is an  
instruction for outputting, from said printer, image  
data read by the scanner function of said different  
apparatus.

15 24. A communication method according to claim 21,  
further comprising the step of:  
storing data in a storage device,  
wherein said operating instruction is an  
20 instruction for storing, in said storage device, image  
data read by the scanner function of said different  
apparatus.

25 25. A communication method according to claim 21,  
further comprising the step of:  
transmitting data by facsimile to a predetermined  
destination,



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a storage step whereat said second device stores data in a storage device,

5           30. A communication method according to claim 26,  
further comprising:

a transmission step whereat said second device  
10 transmits data to a predetermined destination by  
facsimile.

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a process for, based on the obtained results,  
transmitting to said different apparatus an operating

instruction and said user information that are entered  
by said user;

a process for obtaining from said different  
apparatus the results of an authentication process,  
5 performed for said user information that are  
transmitted, to determine again whether said user is  
authorized to use said different apparatus; and

a process for employing the obtained results to  
determine again whether said user is to be permitted to  
10 use said service.

32. A storage medium according to claim 31,  
wherein said information in said registration table and  
said user information each includes at the least a user  
15 ID and a password.

33. A storage medium according to claim 31, said  
computer program further comprising:

a process for employing a scanner to read a  
20 document,

wherein said operating instruction is an  
instruction for printing image data read by said  
scanner using a printer function of said different  
apparatus.

34. A storage medium according to claim 31, said  
computer program further comprising:

a process for employing a scanner to read a document,

wherein said operating instruction is an instruction for storing, in a predetermined area, image data read by said scanner using a storage function of said different apparatus.

35. A storage medium according to claim 31, said computer program further comprising:

a process for employing a scanner to read a document,

wherein said operating instruction is an instruction for transmitting, to a predetermined destination, image data read by said scanner by using a facsimile transmission function of said different apparatus.

36. A storage medium on which is stored a computer program that is to be executed by the computer of an apparatus that performs a service in association with a different apparatus accessible across a network, said computer program comprising:

a process for receiving, from a different apparatus on said network, user information and an operating instruction request for said apparatus;

a process for employing a registration table in which said user information and predetermined



information for a user who is permitted to use said apparatus are registered in advance, to determine whether said user is an authorized user; and

5 a process for employing the obtained results to determine whether said received operating instruction request is to be accepted.

37. A storage medium according to claim 36, wherein said registration information and said user information each includes at the least a user ID and a password.

38. A storage medium according to claim 36, said computer program further comprising:  
15 a process for outputting data to a printer, wherein said operating instruction is an instruction for outputting, by said printer, image data read by the scanner function of said different apparatus.

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39. A storage medium according to claim 36, said computer program further comprising:  
a process for storing data in a storage device, wherein said operating instruction is an  
25 instruction for storing, in said storage device, image data read by the scanner function of said different apparatus.

40. A storage medium according to claim 36, said computer program further comprising:

a process for transmitting data by facsimile to a predetermined destination,

5            wherein said operating instruction is an  
instruction for transmitting, to said predetermined  
destination, image data read by the scanner function of  
said different apparatus.

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[illegible]

FIG. 1

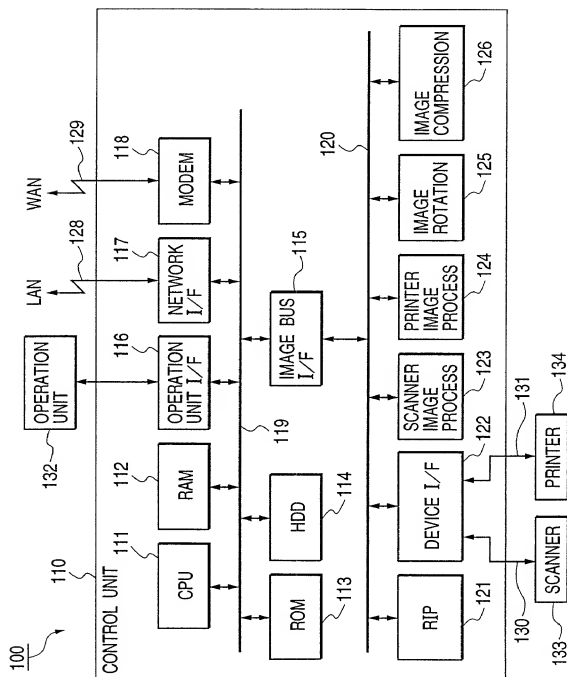
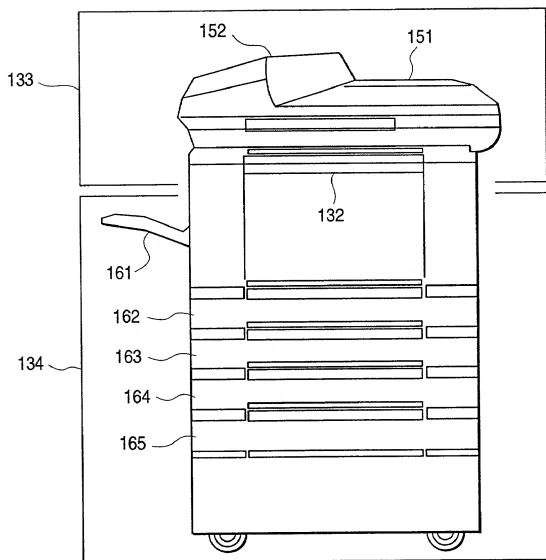


FIG. 2



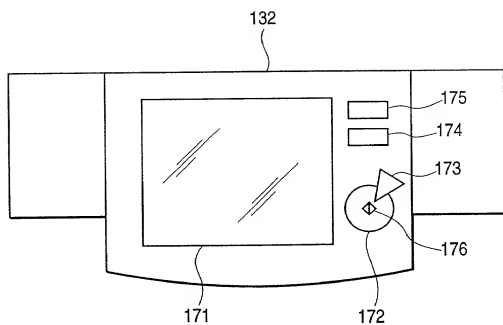
*FIG. 3*

FIG. 4

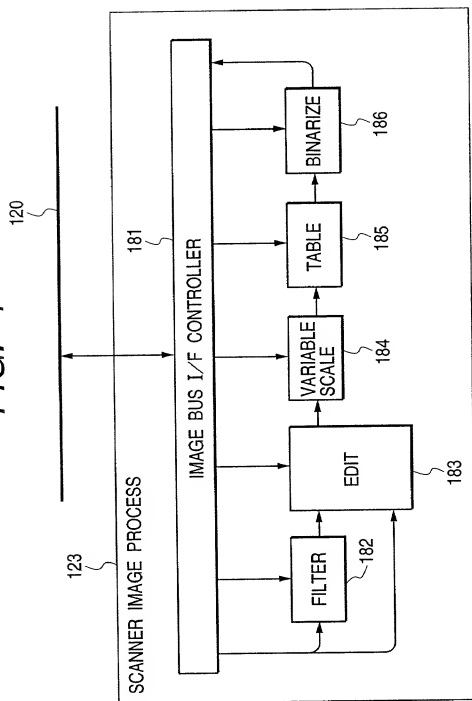


FIG. 5

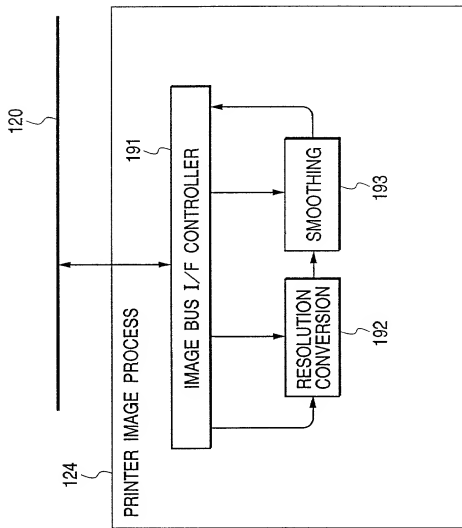




FIG. 6

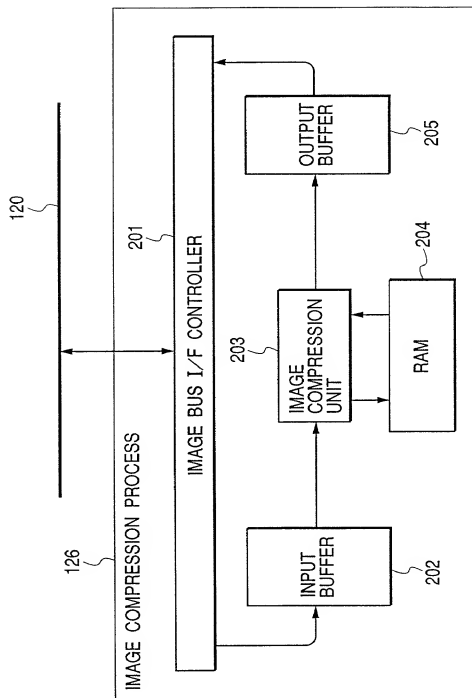


FIG. 7

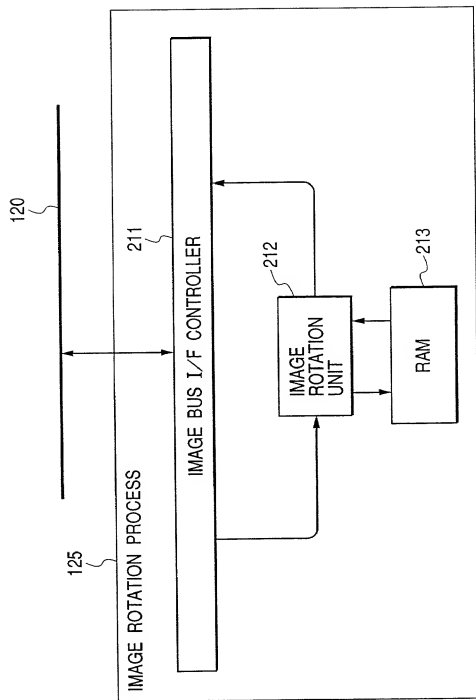


FIG. 8

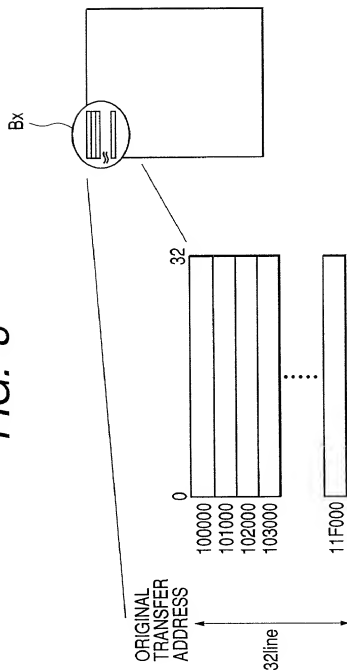
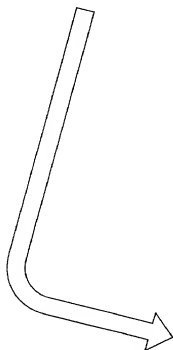


FIG. 9

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

⋮



1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32

...

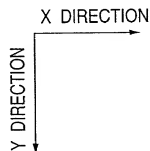


FIG. 10

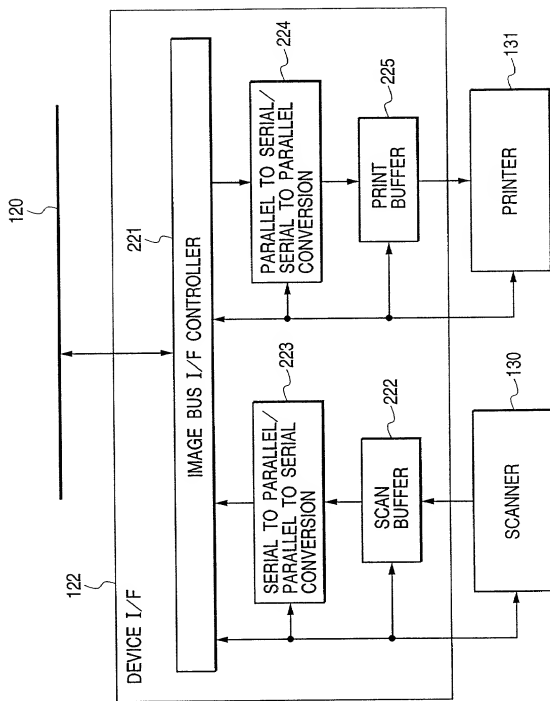


FIG. 11

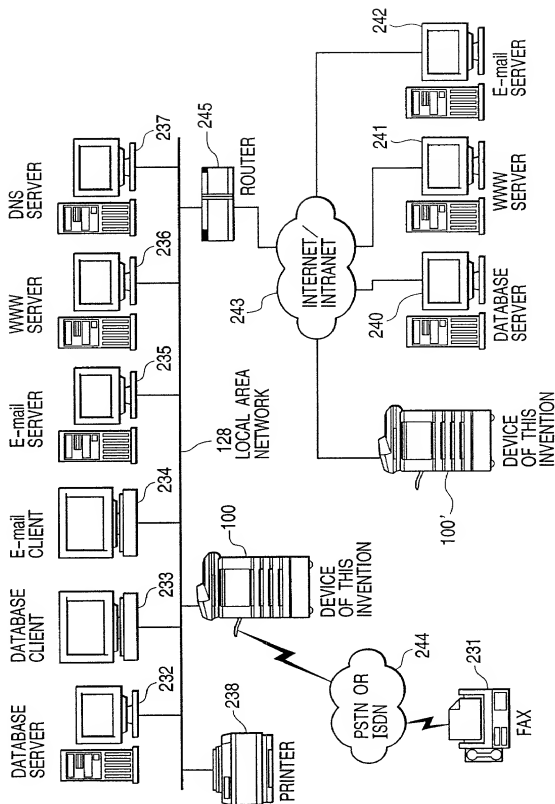


FIG. 12

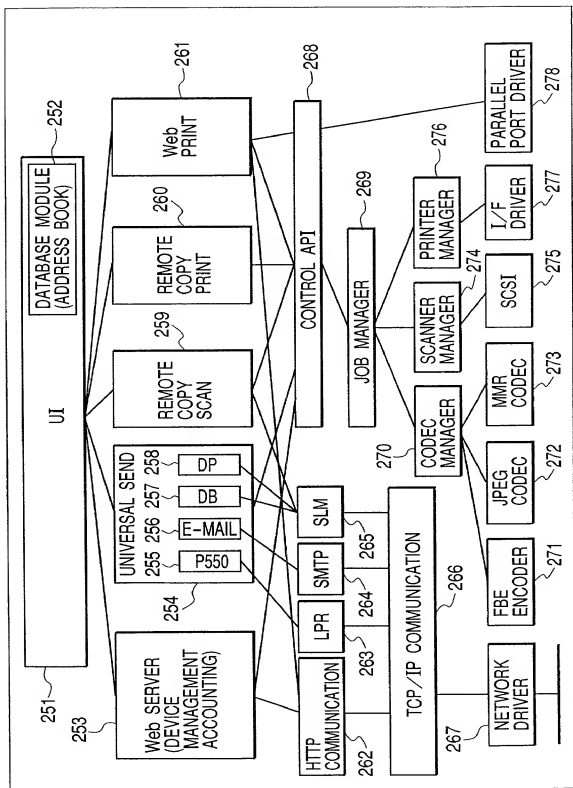


FIG. 13

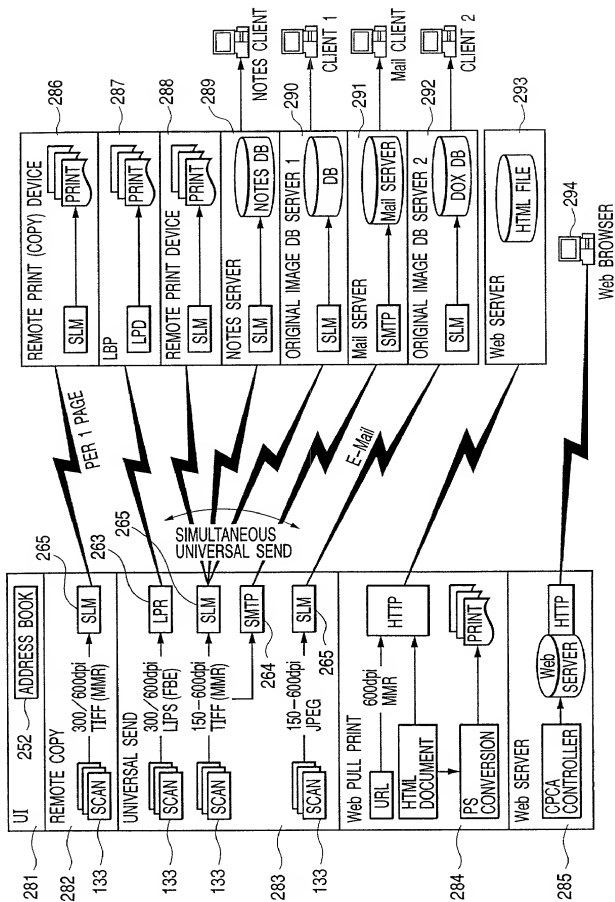




FIG. 14

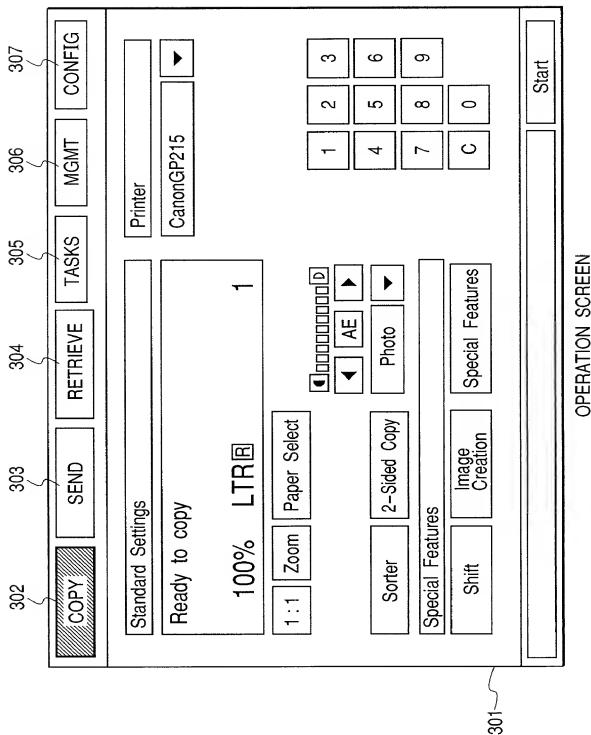


FIG. 15

FIG. 15 is a diagram of an ID INPUT SCREEN. The screen displays a prompt "Please Enter Your ID Number" and a numeric keypad. The keypad is labeled 314 and contains the following buttons: 1, 2, 3, 4, 5, 6, 7, 8, 9, C, 0. The screen also includes a "COPY" button (shaded) and a "SEND" button in the top left corner. The top right corner contains buttons for "RETRIEVE", "TASKS", "MGMT", and "CONFIG". The bottom left corner features a "Shift" button and a "Special Features" button. The bottom right corner has a "Start" button. The screen is labeled 311. The prompt "Please Enter Your ID Number" is labeled 312. The "ID" field is labeled 313. The "PassWord" field is labeled 314. The "OK" button is labeled 315. The "ID INPUT SCREEN" title is at the bottom.

FIG. 16

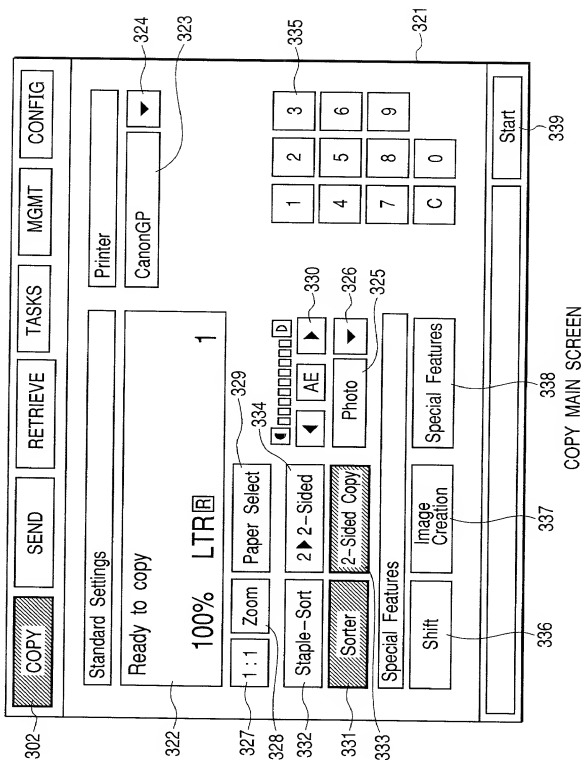













FIG. 18

COPY		SEND	RETRIEVE	TASKS	MGMT	CONFIG
------	--	------	----------	-------	------	--------

Standard Settings		Printer												
Ready to copy		CanonGP215 ▼												
100% LTR 														
1 : 1	Zoom	Paper Select												
    														
Sorter	2-Sided Copy	Photo ▼												
Special Features		  												
Shift	Image Creation													
		<table border="1"> <tr> <td>1</td><td>2</td><td>3</td> </tr> <tr> <td>4</td><td>5</td><td>6</td> </tr> <tr> <td>7</td><td>8</td><td>9</td> </tr> <tr> <td>C</td><td>0</td><td></td> </tr> </table>	1	2	3	4	5	6	7	8	9	C	0	
1	2	3												
4	5	6												
7	8	9												
C	0													
		Start												

342

IMAGE QUALITY LIST

FIG. 19

78% LGL ▶ LTR	100 %	800% MAX	ZoomProgram
73% 11×17 ▶ LGL 11×15 ▶ LTR	-	400%	XYZoom
64% 11×17 ▶ LTR	+	200%	Multi-pg Enlarge
50%	<input type="checkbox"/> Auto	129% LTR ▶ 11×17	
25% MIN	<input type="checkbox"/> Entire Image	121% LGL ▶ 11×17	
<div>Cancel</div> <div>OK</div>			

ENLARGE/REDUCE SETTING SUB SCREEN

343

FIG. 20

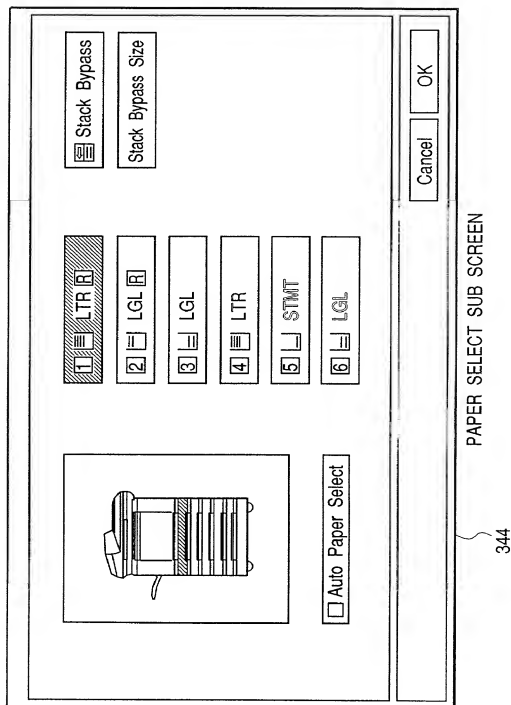


FIG. 21

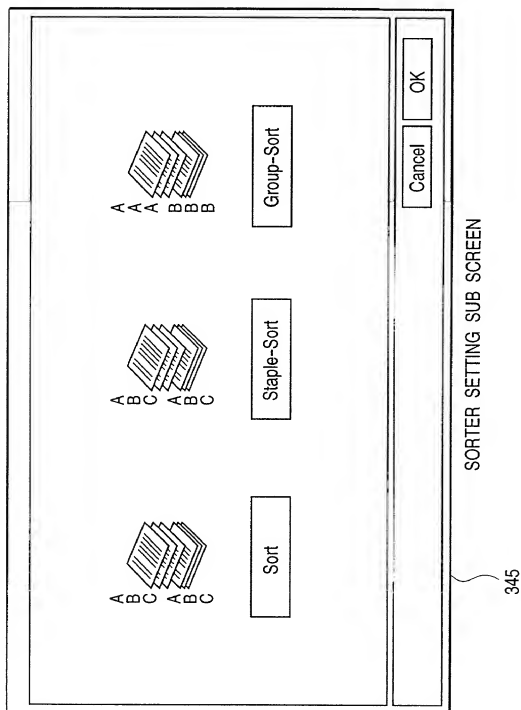




FIG. 22

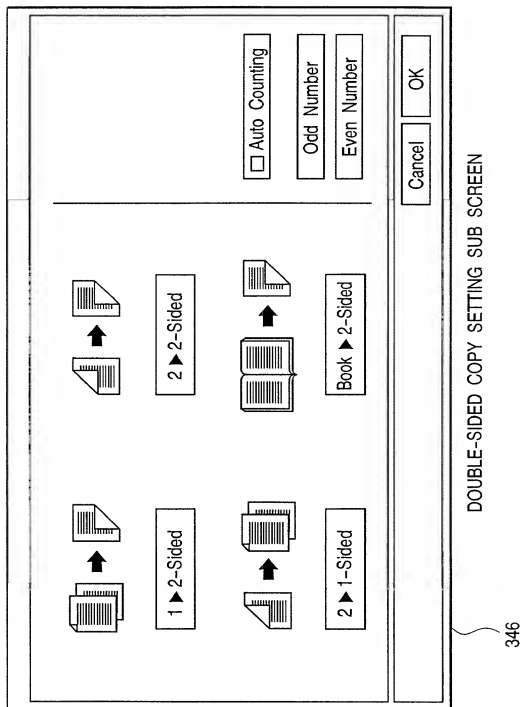


FIG. 23

303

COPY    **SEND**    RETRIEVE    TASKS    MGMT    CONFIG

---

353    Destination    Sel : 6    355

Carrot System TASKS/Canon/Inc./JP

o Micky Rabbit/Jiji Team/Carrot Proj

o Minny Rabbit/Jiji Team/Carrot Proj

Minny Rabbit/Jiji Team/Carrot Proj

minny@abc.def.com

+12(3)4567 9876

CanonGP/Jiji Team/Carrot Project/C

o BEAN

HOME/Jiji Team/Carrot Project/Caro

o 1/micky/Mail

356

File Name

357

☐ Cover Page

362

☐ Put Into HD

363

☐ Print Out

364

365

Scan Setting

LTPR

300dpi

100%

351

AddBook    New    Edit    Delete

358

359

360

361

SEND MAIN SCREEN

366

Start

FIG. 24

662000' 00000000

**COPY** **SEND** **RETRIEVE** **TASKS** **MGMT** **CONFIG**

---

Destination Sel: 0

Touch the button on the bottom  
for sending

select from  
Add Book    Input  
                  New Address

◀    ▶

Subject

Message

File Name

☐ Cover Page

☐ Put Into HD

☐ Print Out

Scan Setting

LTRR 300dpi 100%

AddBook

New

Edit

Delete

---

SEND INITIAL SCREEN

371

FIG. 25

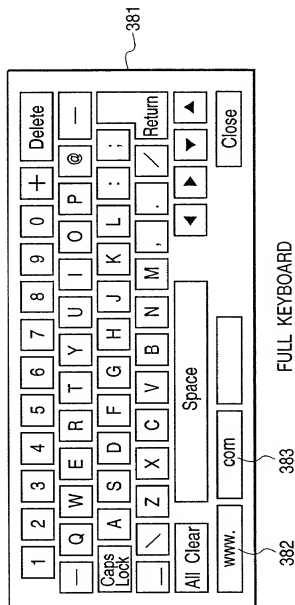


FIG. 26

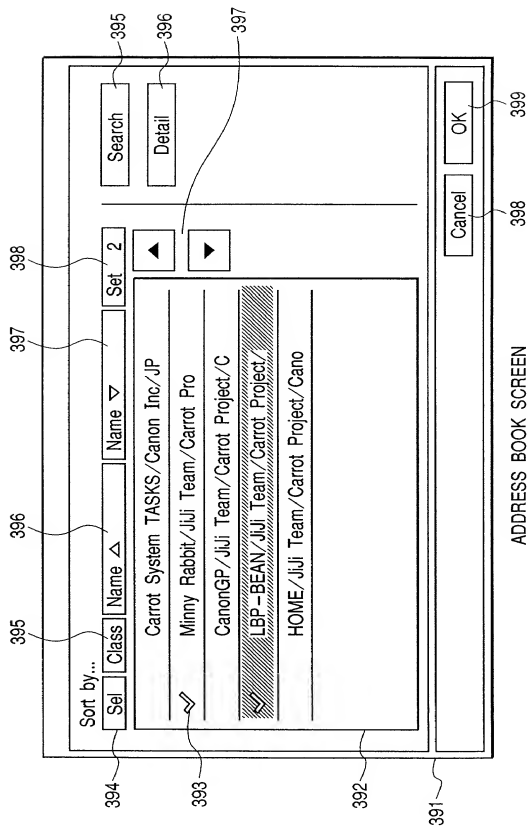


FIG. 27

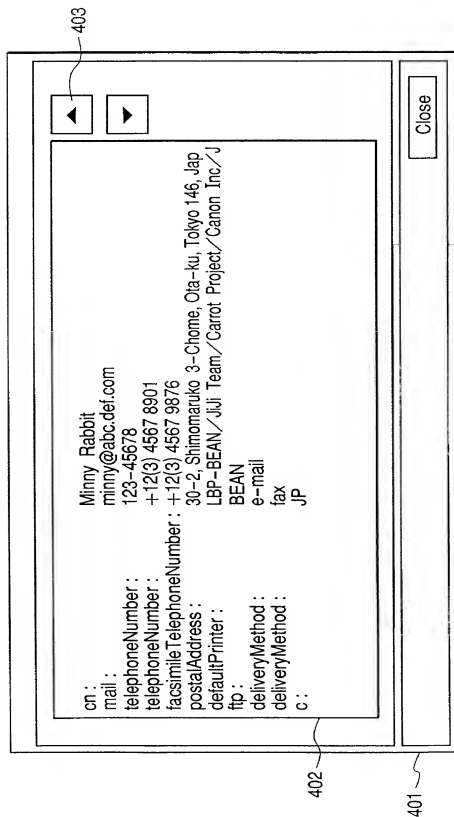


FIG. 28

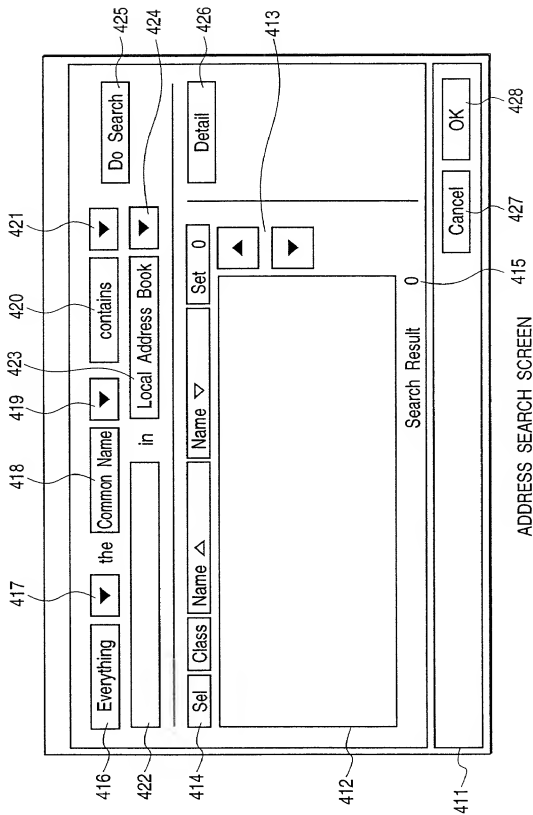


FIG. 29

431

the Common Name in Local Address Book Do Search

Everything Person Printer Data Base Group Everything

Name Set 0 Detail

Search Result 0

Cancel OK

SEARCH OBJECT CLASS LIST



FIG. 30

Everything ▼ the ▼ contains ▼ Do Search

Common Name  
Common Name  
Address  
Country  
Owner  
Location  
Model

Address Book ▼

Set 0

Detail

Search Result 0

Cancel OK

441

SEARCH OBJECT ATTRIBUTE LIST

FIG. 31

contains ▼

is

isn't

contains

doesn't contain

Do Search

Detail

451

Search Result 0

Cancel OK

SEARCH OBJECT CONDITION LIST

FIG. 32

Do Search

Detail

Local Address Book

Local Address Book

Search Result

LDAP server1

LDAP server2

LDAP server3

Search Result 0

Cancel OK

SEARCH OBJECT ADDRESS BOOK LIST

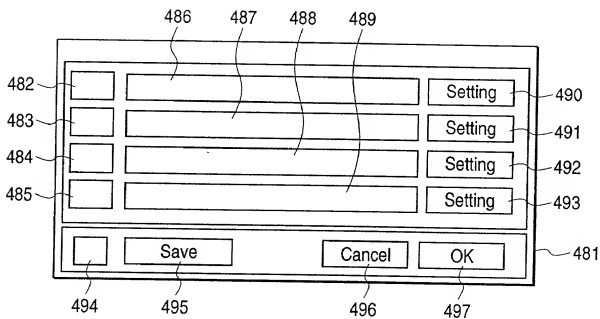
FIG. 33

The interface is divided into several sections:

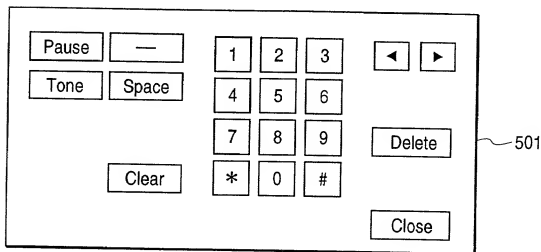
- Search Criteria:** Includes a dropdown menu with 'Everything' selected, followed by 'the', a 'Common Name' field, a 'contains' dropdown, an 'in' field, and a 'Local Address Book' dropdown. A 'Do Search' button is at the bottom right of this section.
- Results Table:**

Sel	Class	Name ▲	Name ▼	Set	3
<input checked="" type="checkbox"/>		Carrot System	TASKS/Canon Inc./JP		▲
		Mimny Rabbit/Jiji	Team/Carrot Pro		▼
		CanonGP/Jiji	Team/Carrot Project/C		
<input checked="" type="checkbox"/>		LBP-BEAN/Jiji	Team/Carrot Project/		
<input checked="" type="checkbox"/>		HOME/Jiji	Team/Carrot Project/ Cano		
- Navigation and Controls:**
  - A 'Detail' button is located above the results table.
  - Navigation arrows (left and right) are positioned to the right of the table.
  - A 'Search Result' label with the number '5' is located below the table.
  - At the bottom, there are 'Cancel' and 'OK' buttons.

Reference numerals point to specific elements: 472 points to the first row of the results table, 412 points to the 'LBP-BEAN/Jiji' row, 471 points to the bottom navigation area, 415 points to the 'Cancel' button, 427 points to the 'OK' button, and 428 points to the 'OK' button.

**FIG. 34**

DETAILED ADDRESS (NEW)

**FIG. 35**

10-KEY PAD

*FIG. 36*

512 minny@abc.def.com Setting

513 +12(3) 4567 9876 Setting

514 LBP-BEAN/JiJi Team/Carrot Project/C Setting

515 BEAN Setting

Save Cancel OK

511

DETAILED ADDRESS (PERSON)

*FIG. 37*

☐ Data Base Name HOME/JiJi Team/Carrot Proj 522

523

1/micky/Mail

2/micky/Mail

3//Work

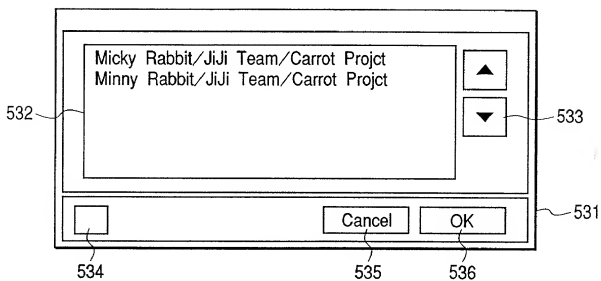
524

525

Cancel 526 OK 527

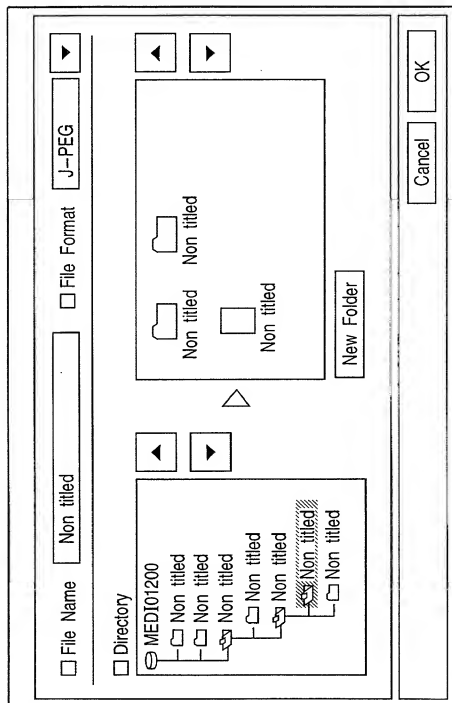
521

DETAILED ADDRESS (DATABASE)

*FIG. 38*

DETAILED ADDRESS (GROUP)

FIG. 39



HARD DISK SETTING SCREEN

541



FIG. 40

553 555 554 556

552

557

559

560

561

562

563

564

565

566

567

568

569

570

551

PRINT SETTING SCREEN

Margin

Shift

Overlay

N on 1

Image Creation

Copies

Paper Select

Zoom

1

A3

100 %

-

+

▶

◀

Duplex

non-sort

200 dpi

Sorter

Resolution

OK

Cancel

FIG. 41

FIG. 41 is a screenshot of a "PAPER SIZE LIST" dialog box. The dialog box is titled "PAPER SIZE LIST" and contains several sections for configuring printing options.

**Top Section:** A horizontal bar at the top contains the text "PAPER SIZE LIST".

**Left Column:** Contains a preview of a document with a flower icon, a checkbox for "Footer/Header", and a list of checkboxes: "Copies", "Paper Select", "Zoom", "Sorter", and "Resolution".

**Center Section:** A large area for selecting paper sizes. It includes a "1" in a box, a "-" button, a "+" button, and a list of paper sizes: A4, A3, A4R (highlighted with diagonal lines), A5, A5R, and B4. To the right of this list are two arrow buttons (left and right).

**Right Column:** Contains a "Margin" button, a "Shift" button, an "Overlay" button, an "N on 1" button, and an "Image Creation" button.

**Bottom Section:** A horizontal bar at the bottom contains a "capability" button, a "Cancel" button, and an "OK" button.

A reference numeral "571" points to the "Image Creation" button.

FIG. 42

FIG. 42 is a screenshot of a software dialog box titled "SORTER LIST". The dialog is organized into several sections:

- Document Preview:** Located at the top left, it shows a thumbnail of a document with a flower icon and a header/footer area.
- Options Section:** Below the preview, there are four checkboxes:
  - ☐ Copies
  - ☐ Paper Select
  - ☐ Zoom
  - ☐ Footer/Header
- Sorting Method List:** A central list box containing five options: "non-sort" (highlighted with a hatched background), "sort", "staple-sort", "group-sort", and "non-sort". A reference numeral "581" points to this list. Above the list are minus (-) and plus (+) buttons, and a dropdown arrow. Below the list are minus (-) and plus (+) buttons, and a dropdown arrow.
- Resolution:** A text field showing "200" with the unit "dpi" next to it, and minus (-) and plus (+) buttons.
- Buttons:** At the bottom, there are buttons for "Margin", "Shift", "Overlay", "N on 1", "Image Creation", "Cancel", and "OK".

SORTER LIST

FIG. 43

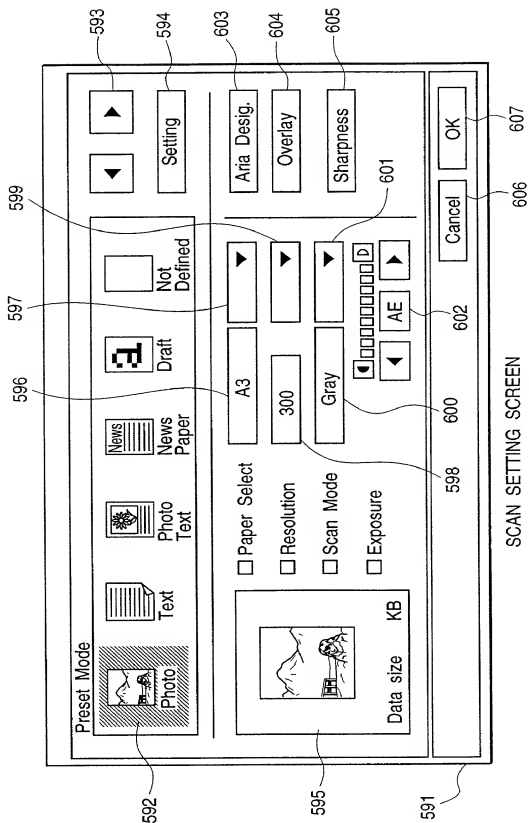


FIG. 44

Preset Mode

Photo Text News Paper Draft Not Defined

☐ Paper Select

☐ Resolution

☐ Scan Mode

☐ Exposure

Data size KB

Paper	Resolution	Scan Mode	Exposure
A3	300	100	200
	300	400	600

Aria Desig.

Overlay

Sharpness

Cancel OK

611

RESOLUTION LIST

FIG. 45

Preset Mode

Photo Text Photo Text News Paper Draft Not Defined

Data size KB

A3 300 Gray Black & White

Paper Select Resolution Scan Mode Exposure

Aria Desig. Overlay Sharpness

Cancel OK

621

SCAN MODE LIST

FIG. 46

Preset Mode

Photo Text Photo Text News Paper Draft Not Defined

Data size KB

☐ Paper Select

☐ Resolution

☐ Scan Mode

☐ Exposure

A4 A3 A4 A4R A5 A5R

Aria Desig.

Overlay

Sharpness

Cancel OK

631

PAPER SIZE LIST

FIG. 47

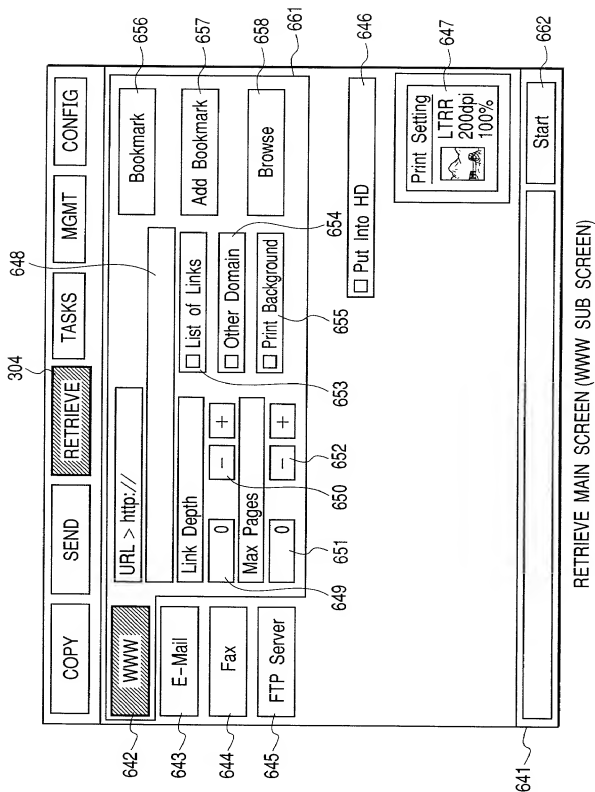




FIG. 48

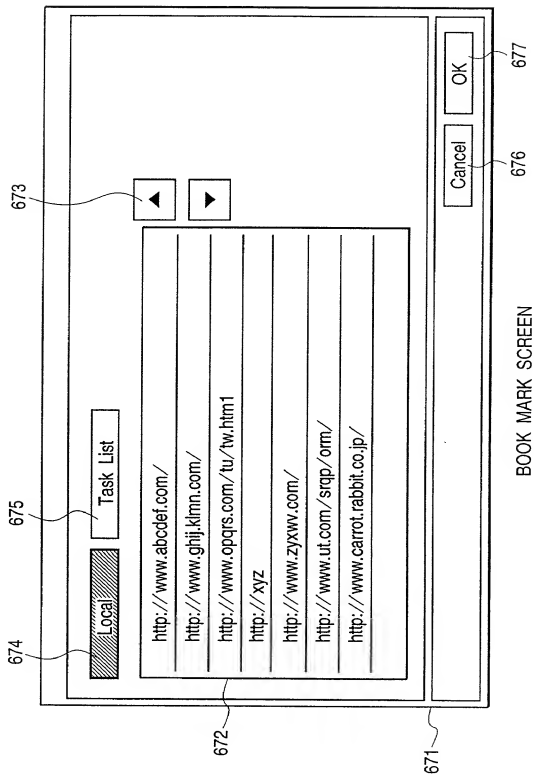


FIG. 49

643

COPY

SEND

RETRIEVE

TASKS

MGMT

CONFIG

WWW

E-Mail

Fax

FTP Server

Server

Login Name

Password

☐ Delete From Server

☐ Put Into HD

681

682

684

683

Print Setting

LTRR

200dpi

100%

Start

E-MAIL SUB SCREEN

FIG. 50

The screenshot displays the 'FAX SUB SCREEN' interface. At the top, a row of buttons includes COPY, SEND, RETRIEVE (highlighted with a hatched pattern), TASKS, MGMT, and CONFIG. Below these, a vertical column of buttons contains WWW, E-Mail, Fax (highlighted with a hatched pattern), and FTP Server. The central area, labeled 691, contains a large rectangular display area (692) showing 'Fax Number' above a text input field. To the right of this area is a checkbox labeled 'Put Into HD'. Below the central area is a 'Print Setting' box showing 'LTRR', '200dpi', and '100%' with a small printer icon. At the bottom right is a 'Start' button. The label 'FAX SUB SCREEN' is positioned at the bottom of the interface.

644

692

691

Put Into HD

Print Setting  
LTRR  
200dpi  
100%

Start

FAX SUB SCREEN

FIG. 51

COPY SEND RETRIEVE CONFIG

TASKS MGMT CONFIG

701

702

704

705

703

644

Put Into HD

Print Setting

LTRR

200dpi

100%

Start

FTP SUB SCREEN

FIG. 52

The screenshot displays the 'RETRIEVE-PRINT SETTING SCREEN' with a window titled 'capability'. The screen is organized into several sections:

- Top Section:** Contains a preview icon of a document with a flower, a 'Footer/Header' checkbox, and a 'Duplex' checkbox.
- Left Column:** Includes checkboxes for 'Copies', 'Paper Select' (set to 'A3'), and 'Zoom' (set to '100 %').
- Right Column:** Includes checkboxes for 'Sorter' (set to 'non-sort') and 'Resolution' (set to '200 dpi').
- Bottom Section:** Contains checkboxes for 'Margin', 'Shift', 'Overlay', 'N on 1', and 'Image Creation'.
- Navigation:** 'Cancel' and 'OK' buttons are located at the bottom right.

A bracket on the right side of the window is labeled '711'.

FIG. 53

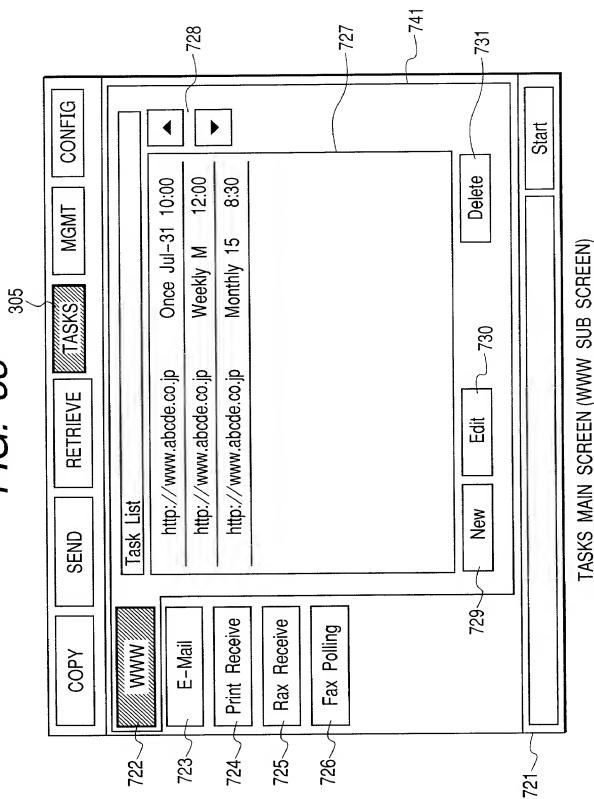


FIG. 54

754 URL > http://

752

753 Link Depth 0 - +

755 Max Pages 0 - +

756

765 Check Time 10:00 Setting

767 ☐ Print When Changed

757 ☐ List of Links

758 ☐ Other Domain

759 ☐ Print Background

760 ☐ Put Into HD

766 ☐ Forward

761 Bookmark

762 Add Bookmark

763 Browse

764 Print Setting LTR 600dpi 100%

769 Cancel

770 OK

WWW DETAILED SETTING SCREEN

FIG. 55

Time

10:00

+

-

Once

Weekly

Monthly

Month

Jan

Data

1

+

-

Cancel

OK

CHECK TIME SUB SCREEN (ONCE)



FIG. 56

Time 10:00 - +

Once Weekly Monthly

Sun Mon Tue Wed Thu Fri Sat

Cancel OK

773 781

CHECK TIME SUB SCREEN (WEEKLY)

FIG. 57

Time 10:00 - +

Once Weekly Monthly

Data 1 - +

Cancel OK

774 791

CHECK TIME SUB SCREEN (MONTHLY)

FIG. 58

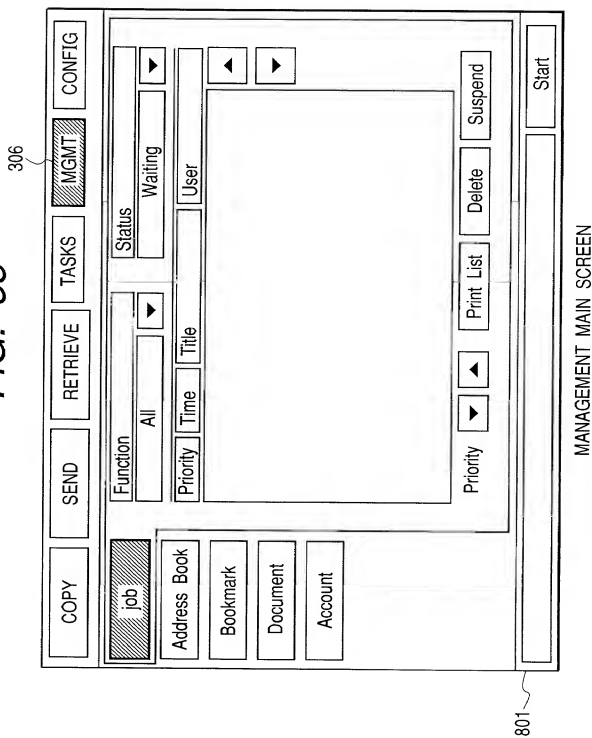


FIG. 59

307

811

COPY SEND RETRIEVE TASKS MGMT CONFIG

Network

E-Mail/WWW

Directory

User ID

Maintenance

Time

☐ DHCP

IP Address  
111.222.111.000

SubNetMask  
111.111.111.0

DefaultGateway  
222.222.222.222

Setting

☒ DNS Server

Host Name  
PPP01

Domain Name  
aaa.oooo.co.jp

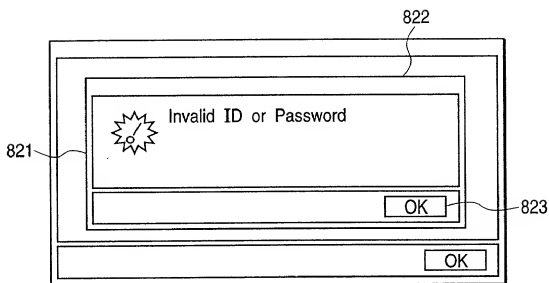
DNS Search Order  
111.000.000.1  
222.000.000.1

Setting

Priority

Start

CONFIGURATION MAIN SCREEN

*FIG. 60*

ERROR SCREEN

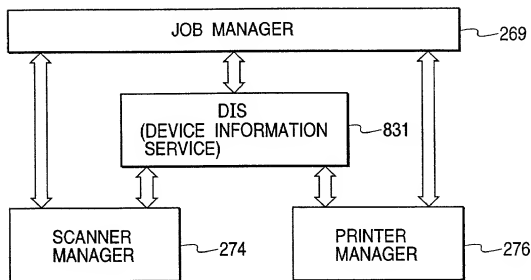
*FIG. 61*

FIG. 62

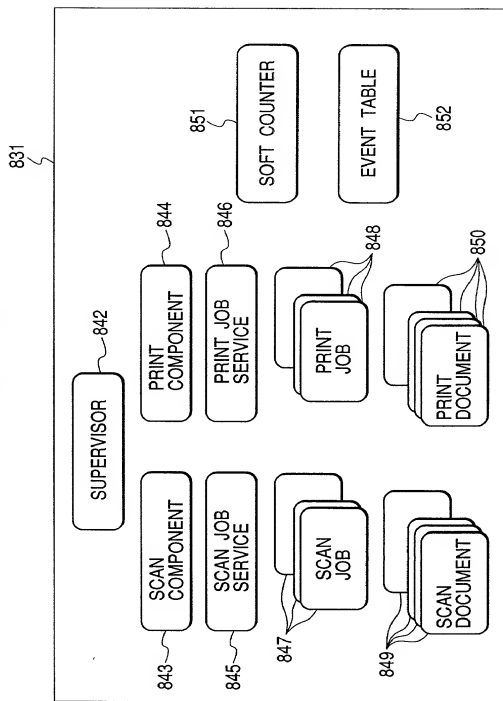


FIG. 63

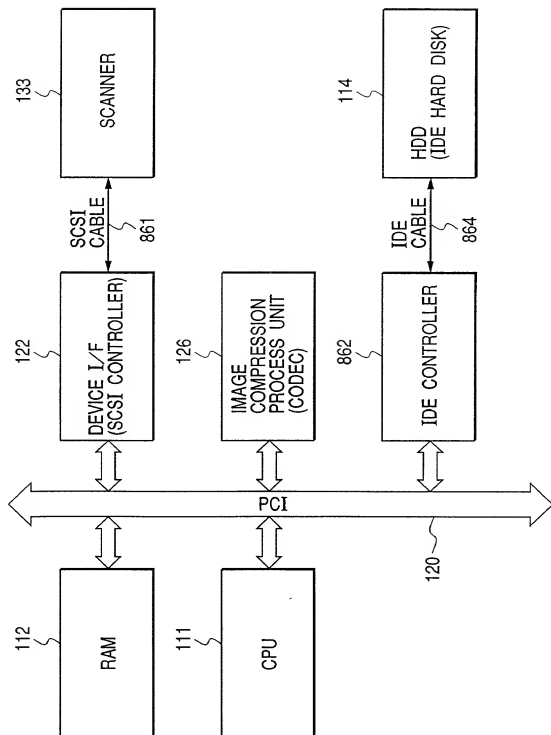


FIG. 64

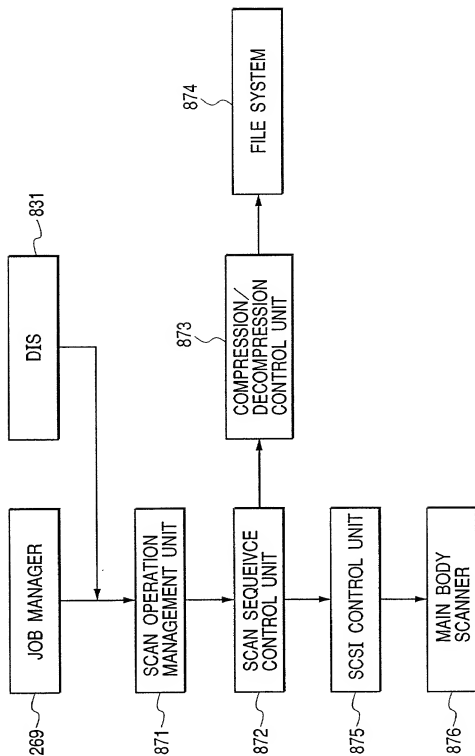
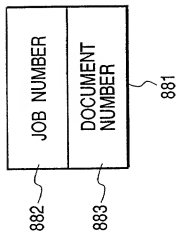




FIG. 65A



884

FIG. 65B

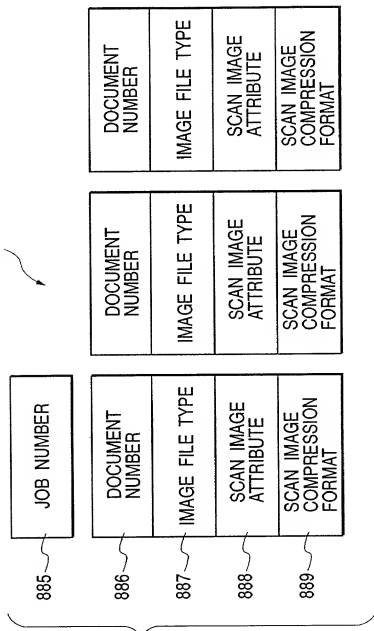
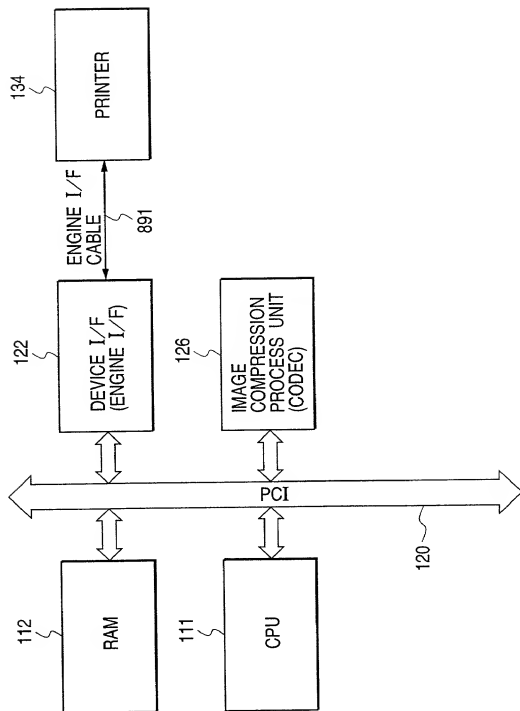


FIG. 66



*FIG. 67*

WIDTH
LINES
SOURCE

*FIG. 68*

BOOK NO.
FEED_REQ
IMAGE_START
IMAGE_REQ
IMAGE_END
SHEED_OUT

602000-00000000

FIG. 69

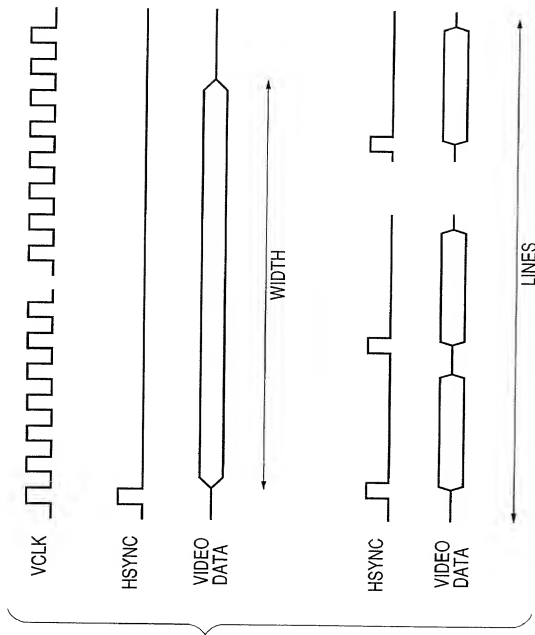


FIG. 70

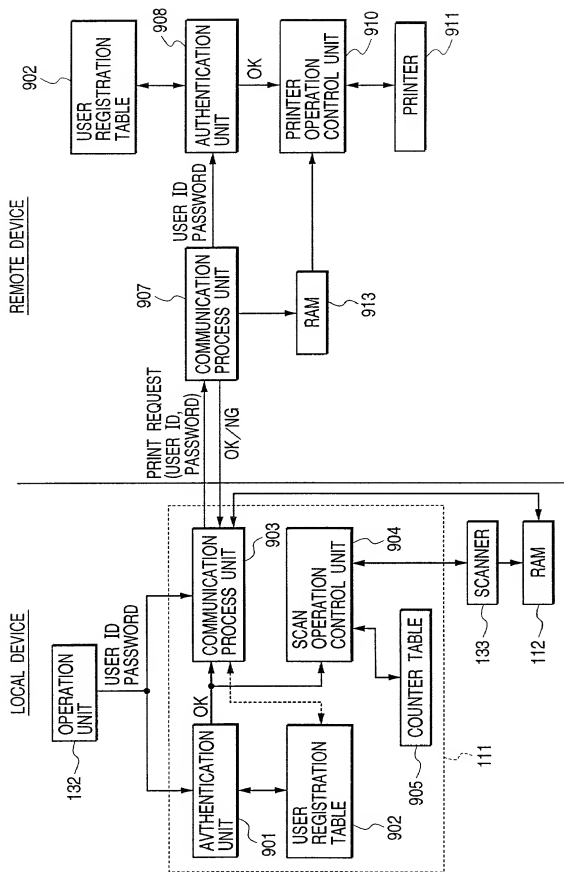


FIG. 71

ID NUMBER	PASSWORD	USER'S NAME	ADDITIONAL INFORMATION
010331—0100	xxxxxxx	Keith	
010331—0101	xxxxxxx	Michael	EXTENTION 100—1523
.	.	.	.
.	.	.	.
.	.	.	.
020224—0113	xxxxxxx	Mary	DEVELOPMENT DIVISION
.	.	.	.
.	.	.	.
.	.	.	.

USER REGISTRATION TABLE

FIG. 72

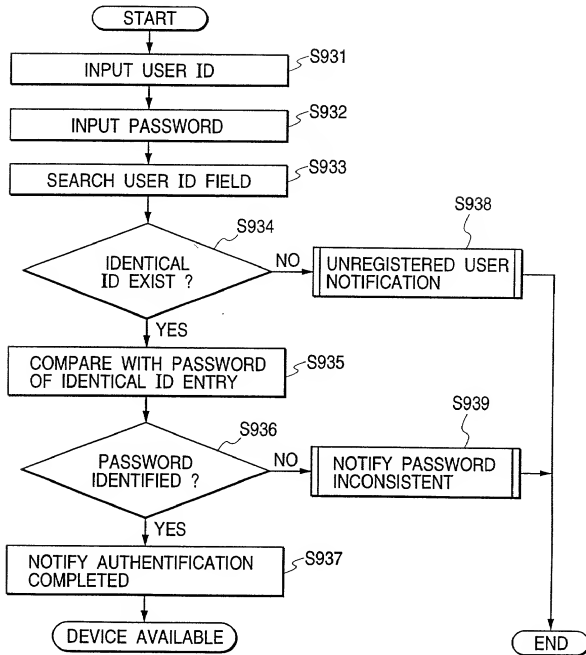


FIG. 73

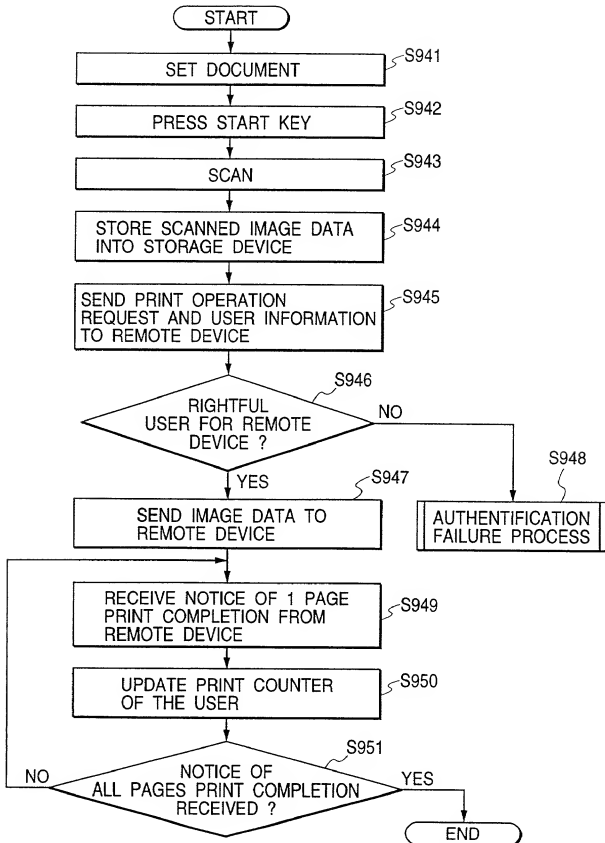




FIG. 74

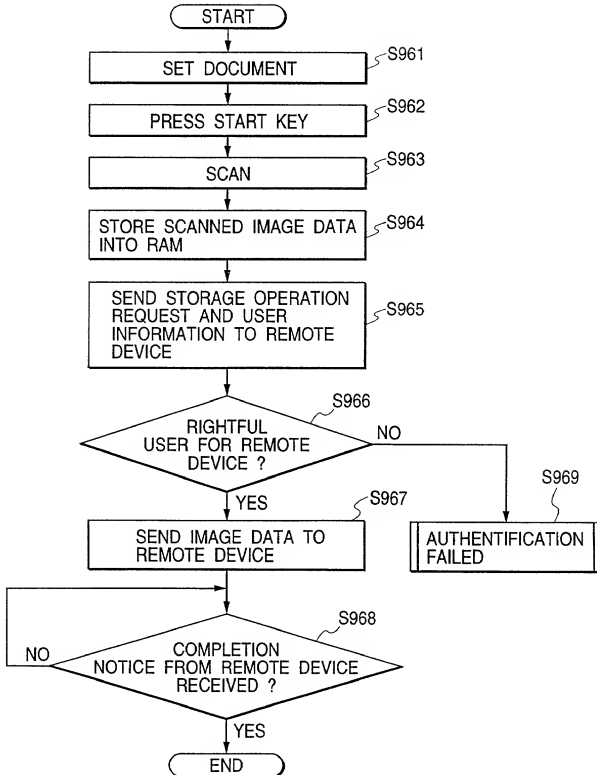
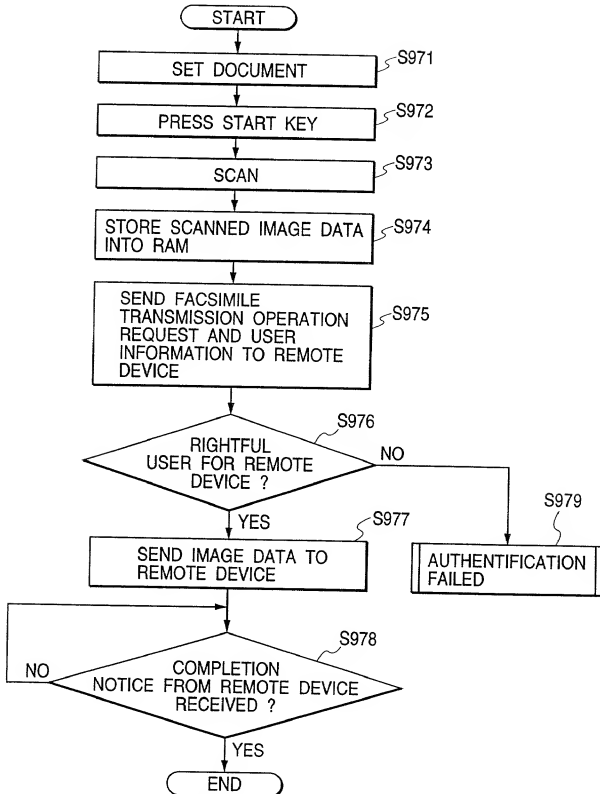


FIG. 75



COMBINED DECLARATION AND POWER OF ATTORNEY  
FOR PATENT APPLICATION  
(Page 1)

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled APPARATUS FOR PERFORMING A SERVICE IN COOPERATION WITH ANOTHER APPARATUS ON A NETWORK

the specification of which ☒ is attached hereto ☐ was filed on \_\_\_\_\_ as United States Application No. or PCT International Application No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or §365(b), of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT international application which designates at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed:

Country	Application No.	Filed (Day/Mo./Yr.)	(Yes/No) Priority Claimed
JAPAN	10-250758	04 September 1998	YES

I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

Application No.	Filed (Day/Mo./Yr.)	Status (Patented, Pending, Abandoned)
-----------------	---------------------	---------------------------------------

I hereby appoint the practitioners associated with the firm and Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to the address associated with that Customer Number:

**FITZPATRICK, CELLA, HARPER & SCINTO**  
Customer Number: 05514

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole or First Inventor, SHINICHI KANEMATSU

Inventor's signature \_\_\_\_\_

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